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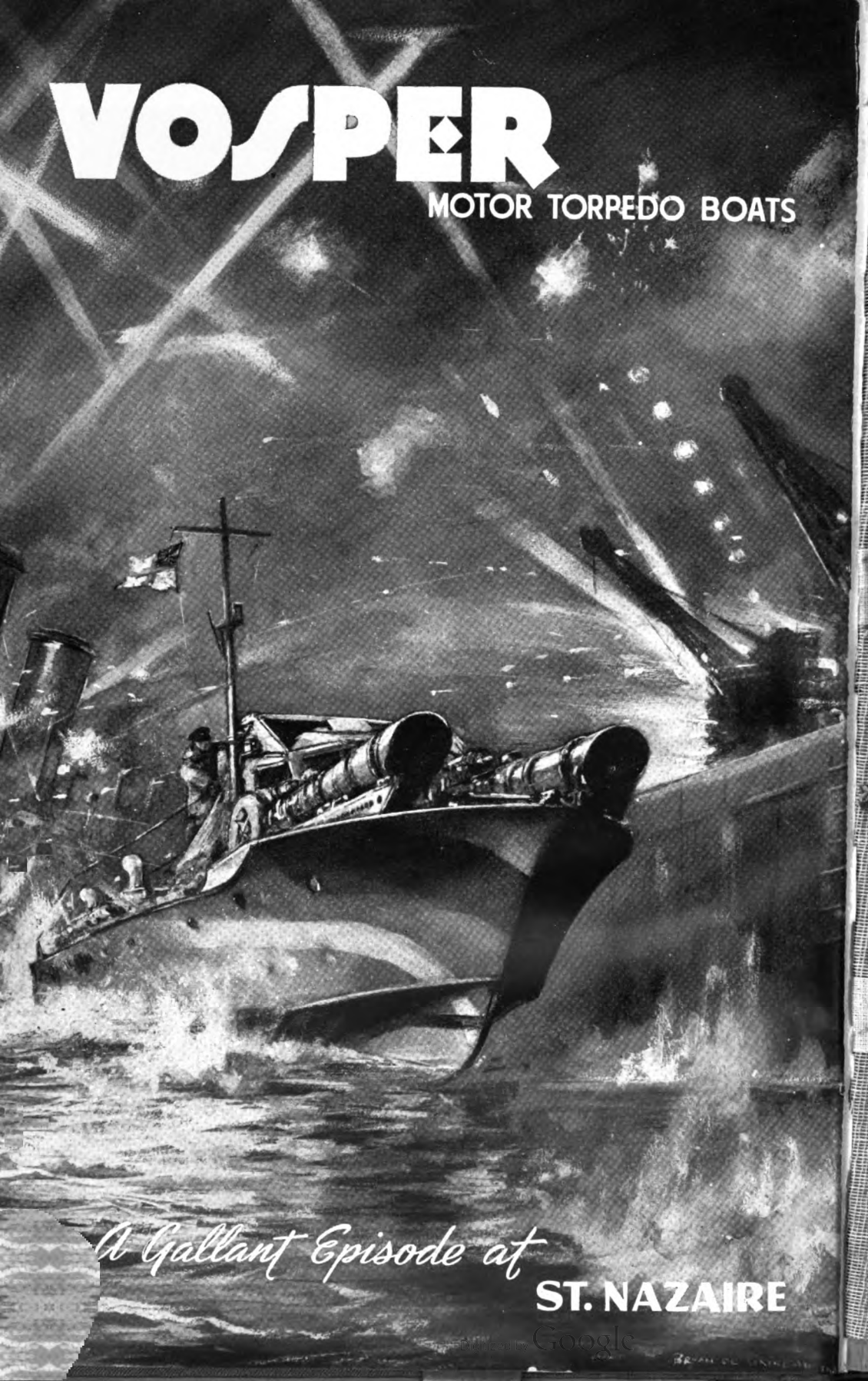
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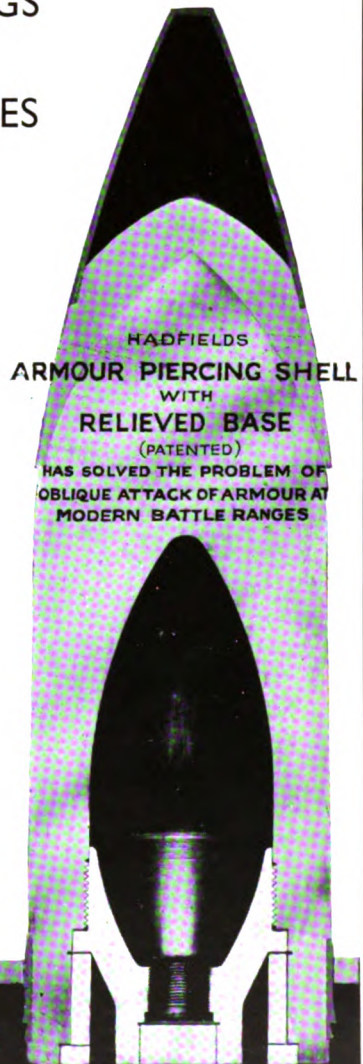


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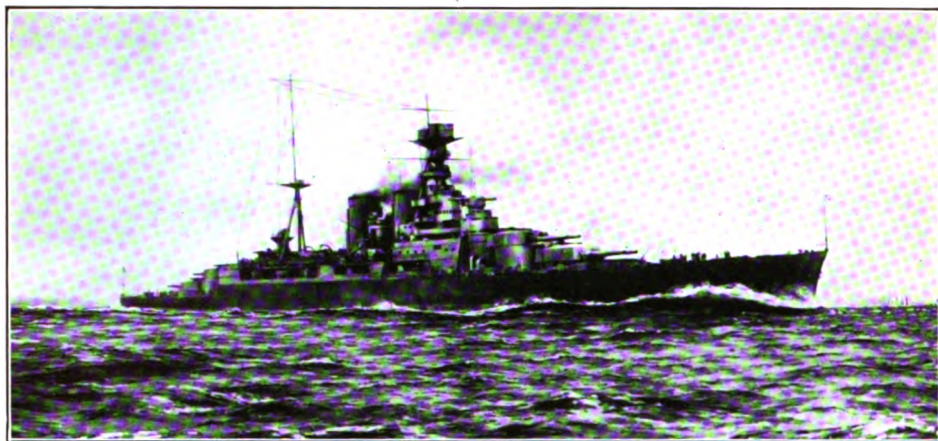


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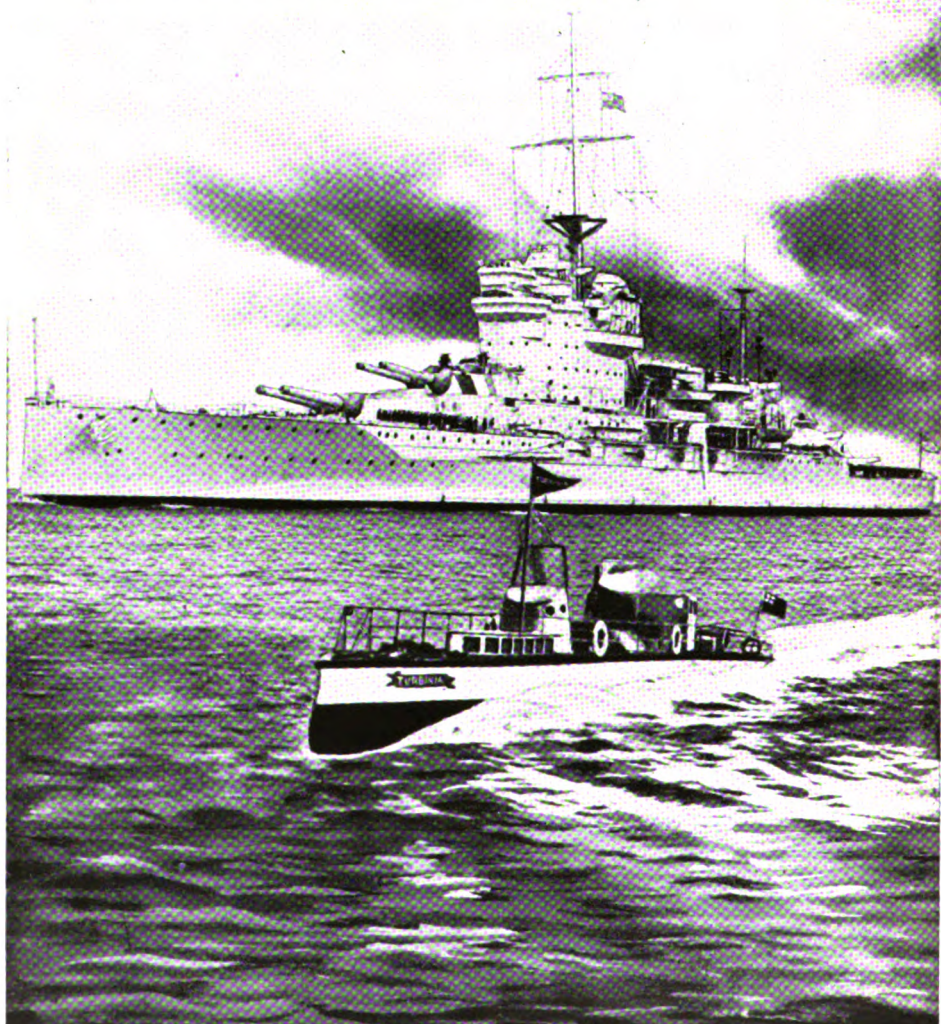
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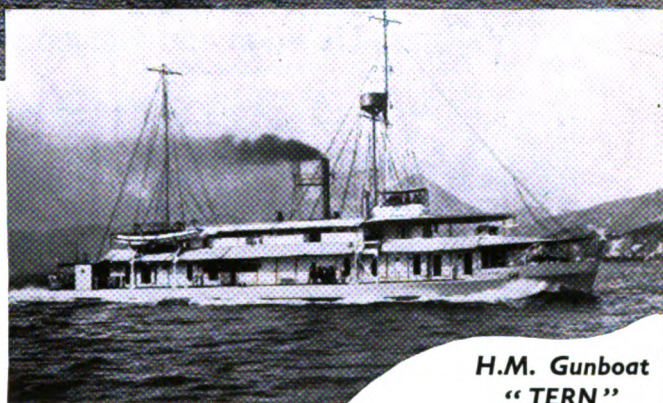
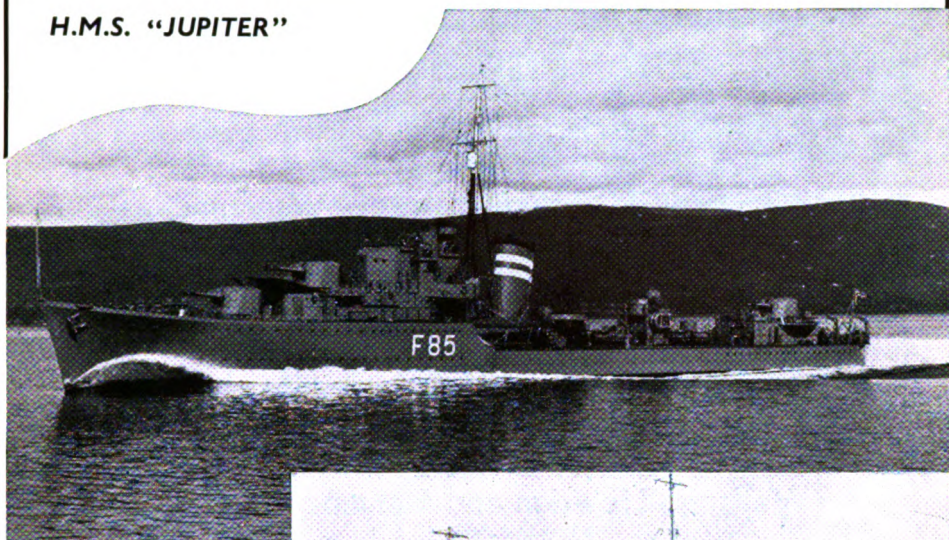
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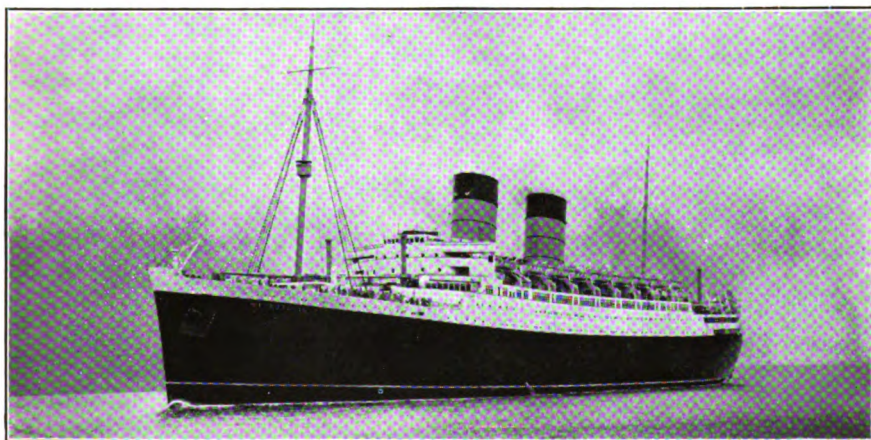
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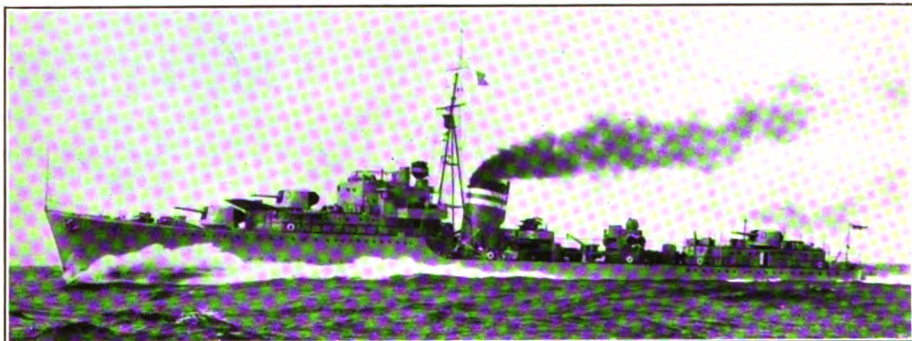


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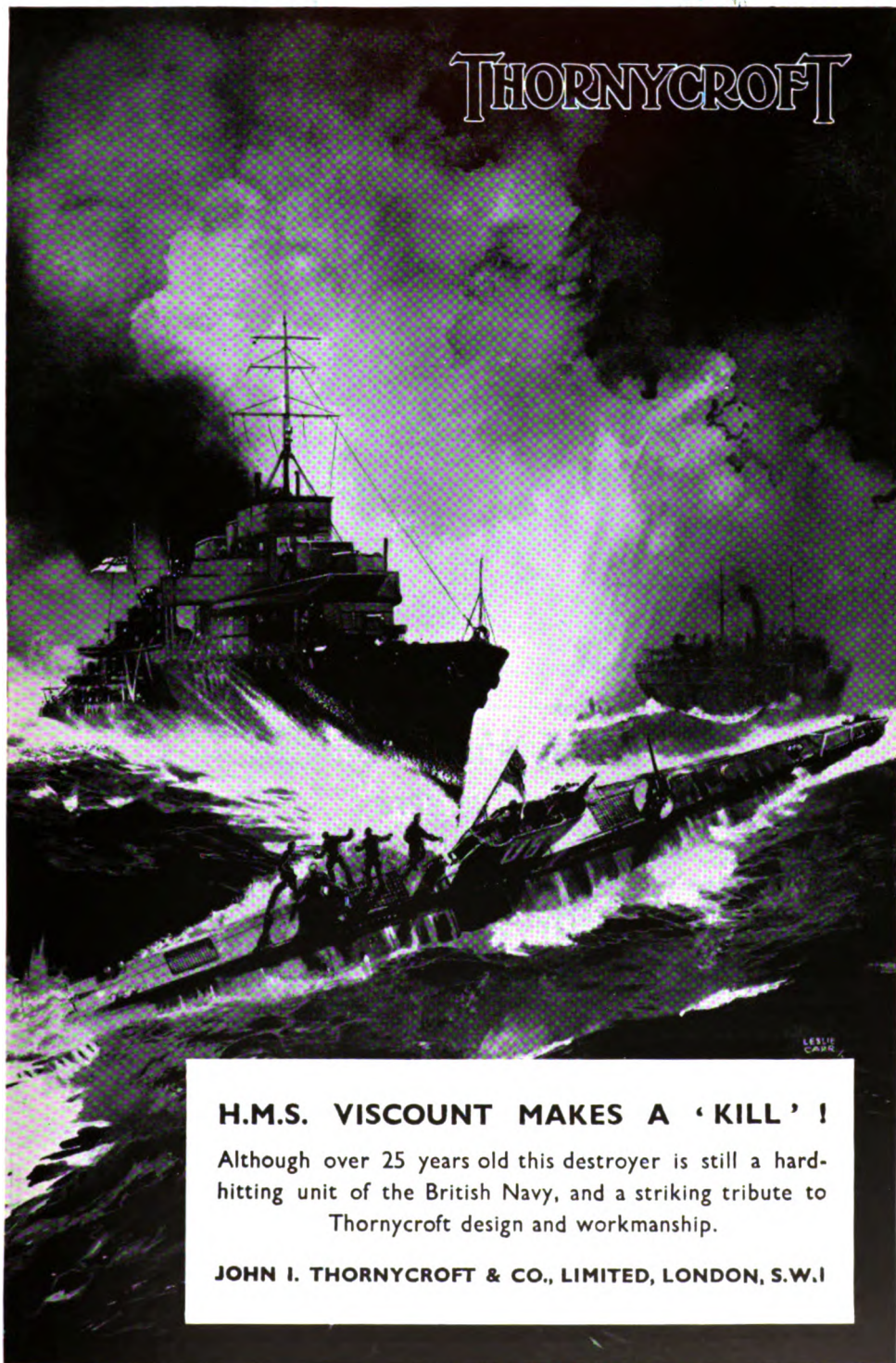
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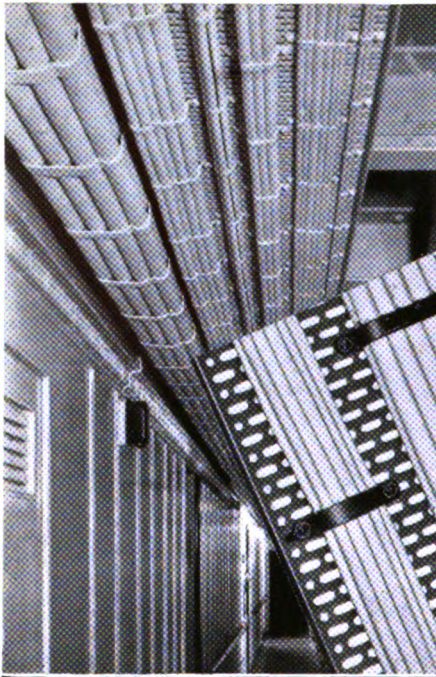
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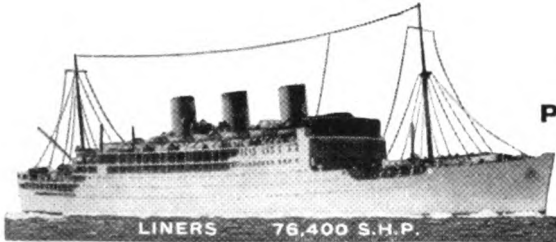
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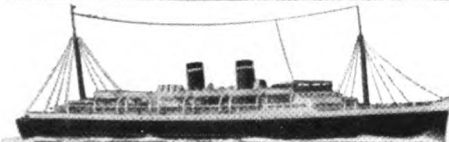
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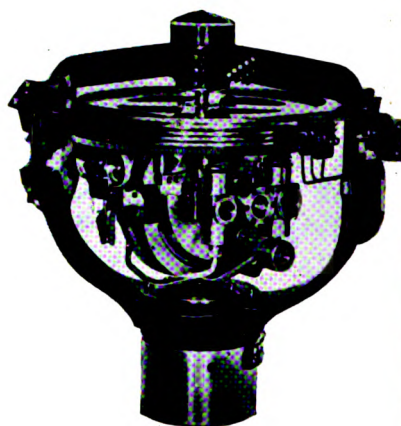


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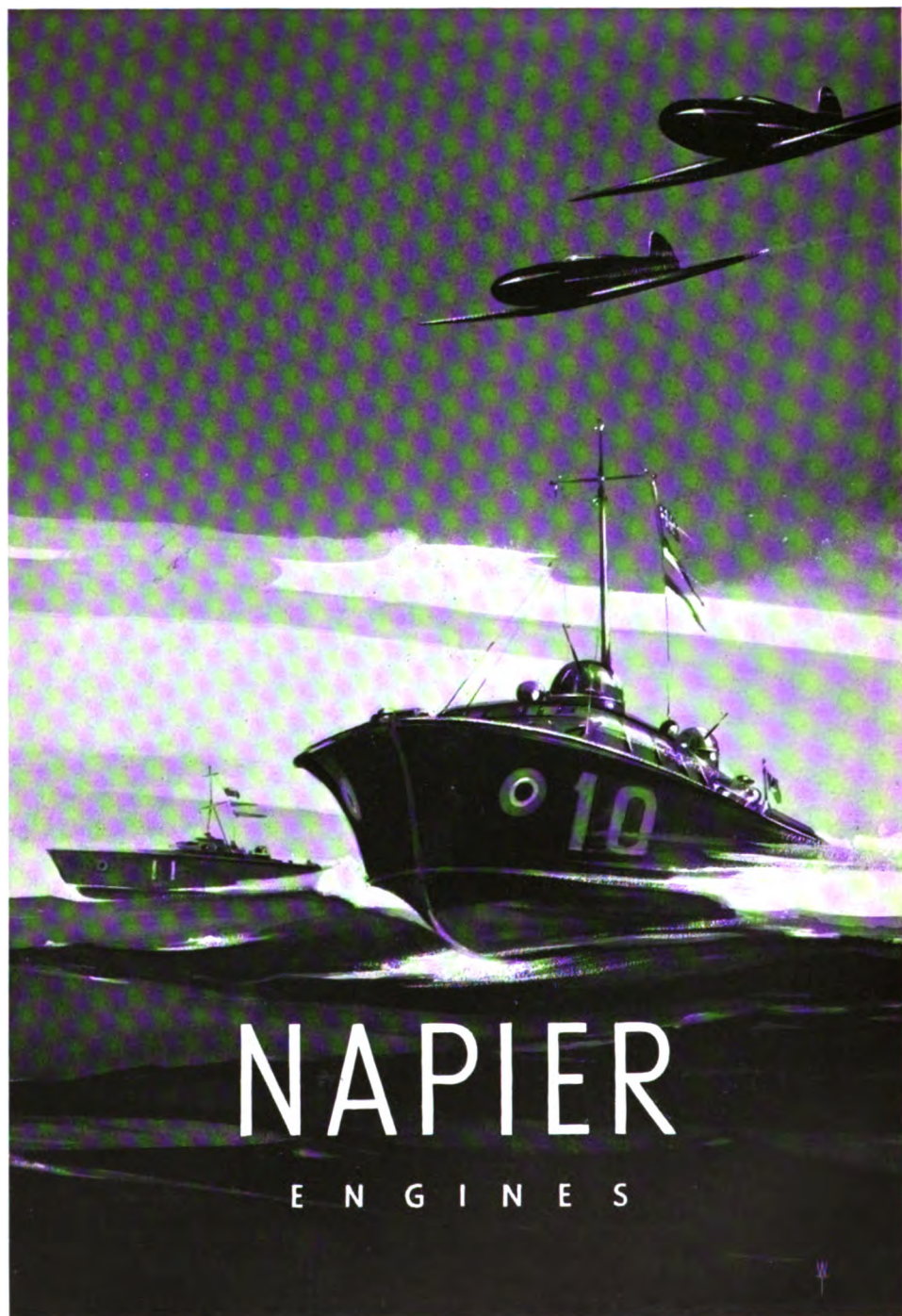
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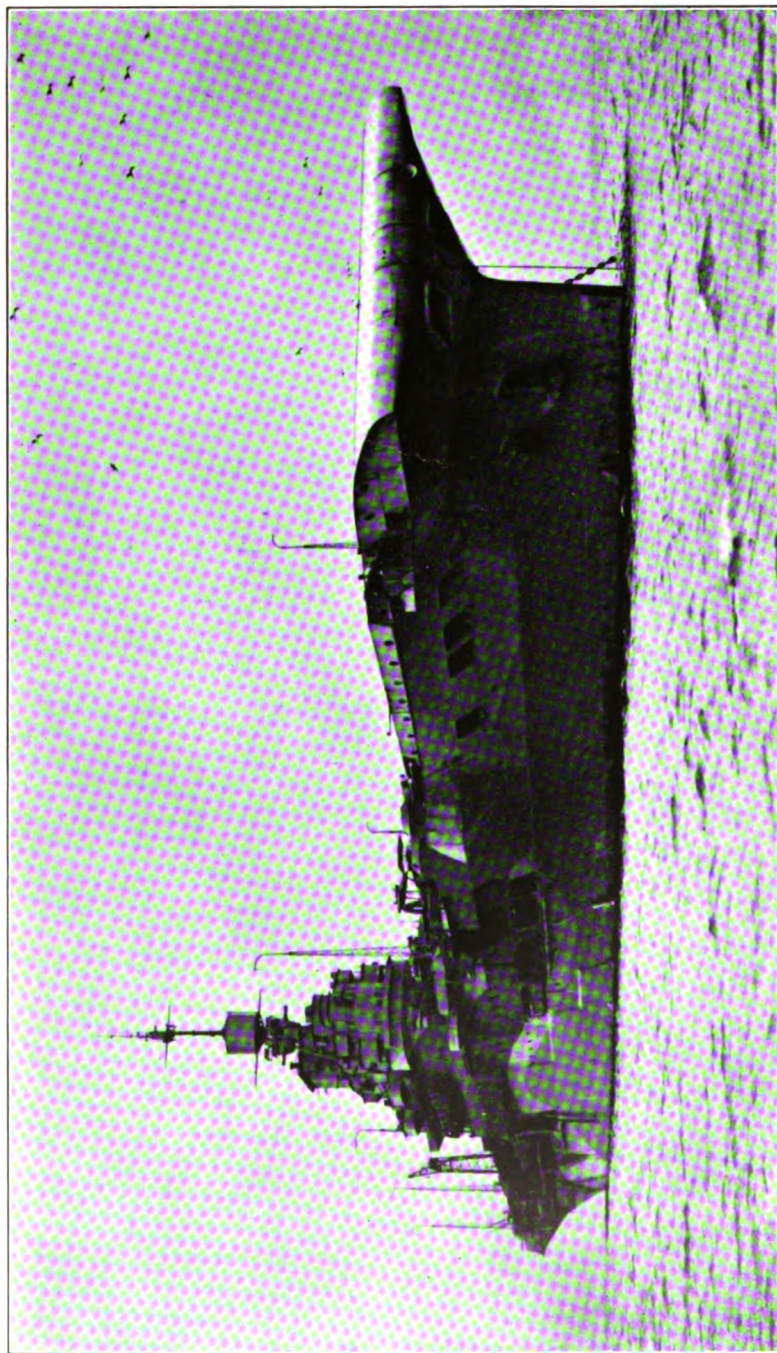
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PREFACE

It was hoped this year to get "Brassey" out within a week or two of the close of the year 1942, with which it deals. Once again, however, the difficulties of book production in time of war—particularly a book dealing with the conduct of the war, in the composition of which particular care is essential in order to avoid any possible assistance to the enemy—have again conspired to delay its publication. Most of the contents had to be completed early in the New Year, and it was only possible, therefore, to bring them up to date as at the close of 1942. Events and developments which have occurred since that date are not dealt with in this volume. They will fall to be chronicled in the next issue.

In form and content this latest volume follows the pattern of earlier war issues. The war at sea as a whole is chronicled, as far as knowledge of its details have been allowed to become public property, in Chapter I. Sir Archibald Hurd again deals with the Merchant Navy's part in the war, Major Oliver Stewart with air operations in the war at sea, Mr. F. E. McMurtrie summarizes the progress of foreign navies—a subject on which his knowledge is unique—and Commander Kenneth Edwards contributes a special study of the operations of two classes of ships of the British Navy which have done outstanding service—submarines and light coastal craft. A contributor, whose name would be very familiar but who prefers for good reasons to write under the pseudonym of "Greenwich," surveys and analyses the U-boat war up to the end of 1942.

Dealing with the wider issues, I am fortunate in having obtained the permission of the Council of the Royal Institute of International Affairs to reproduce an address delivered by Admiral Sir Herbert Richmond at Chatham House on November 26, 1942, entitled "The Modern Conception of Sea Power." This subject is very far from being academic; it is of the highest practical importance to the conduct of the war and consequently to the future of the world. The rise of the capabilities of aircraft in war has given origin to some theories, springing from the natural enthusiasm of those who have devoted themselves to the development of the new arm and of the new Service which wields it, which on close analysis have proved to be of doubtful validity; and it is of first importance that we should subject all such theories to close examination if we are to avoid being misled. The author of my last chapter, who also prefers to remain anonymous, deals with this aspect of modern war from a standpoint which differs slightly from that of Sir Herbert Richmond though he reaches conclusions which are in complete harmony with his.

It is a matter for regret that I have not been able this year to include contributions from any of my former American collaborators. I have therefore included a chapter composed of the official announcements made by the Navy Department concerning the principal events in the war in which the United States Navy has been engaged. Fuller accounts of

these events some day, no doubt, will see the light ; but in the meanwhile the documents here reproduced give the most authoritative version of those events that is anywhere available.

For the revision of the Reference Section I am again indebted to Mr. H. R. Mason. Once more this section can make no claim to be complete ; that is quite impossible in time of war. All that can be claimed for it is that it embodies all the reliable information that has been allowed to become public property up to the end of 1942, the date to which it has been corrected. I have been able this year once more to include a Table of Naval Aircraft, in which is summarized all the details which have been published up to the same date. The Miscellaneous Section once again contains a concise " Diary of Naval Events," and I have also included, as an authoritative official summary of the same period, the speech of Mr. Alexander, First Lord of the Admiralty, in introducing the Navy Estimates for 1943.

Once again I desire to acknowledge with appreciation and thanks the courtesy with which various authorities, British and Allied, have replied, so far as war time restrictions would allow, to my requests for information or assistance.

H. G. THURSFIELD.

REVIEW OF 1942.

CHAPTER I.

A NAVAL CHRONICLE OF 1942.

JANUARY.

ON December 31 Mr. Churchill stated at a press conference in Ottawa that the net shipping losses of the five months just ended had been only one-fifth of those in the preceding five months. This statement was encouraging but not precise. It indicated, as it was doubtless intended to do, that things were going better than they had been, in the struggle against the German war on shipping. But it did not indicate whether that was due to increased execution against U-boats, more effective defence of convoys, or merely increased production of new ships without diminution of shipping losses. Whatever the facts in these respects, the position began to deteriorate from that time. During January the greatest effort of the U-boats against shipping was transferred from the eastern part of the Atlantic to the American coast, and as the defence of shipping was apparently less highly organised on that side of the ocean, losses began to mount once more. In the middle of January a tanker was torpedoed no more than 60 miles from Montauk Point, Long Island, and thereafter a number of ships were torpedoed in that vicinity.

This development gave rise to speculations as to how it was that U-boats were now able to operate so far from their bases. A number of more or less wild theories were put forward; it was suggested that they were using bases on the American coast and were being supplied clandestinely by traitors; that the Germans had invented a wonderful new engine which greatly increased the U-boats' range of action. There is no reason to suppose that any of these theories were well founded. The range of U-boats was sufficient even during the last war to enable them to operate off the American coast and there was no intrinsic difficulty in their repeating that performance to-day. It is probable they made use of supply ships in order to increase their endurance, probably going to the less frequented areas south of Bermuda, where fine weather is more often experienced, to replenish from them. That the move westward had not been made sooner was probably due to political considerations, to the desire not to hasten the United States's entry into the war, rather than by reason of any technical difficulty. That it was undertaken in January was very likely from a desire to assist the Japanese by discouraging any transfer of Allied forces from the Atlantic to the Pacific.

No comprehensive figures of shipping losses were issued, but in America a great many of the losses were announced and described in the press as they occurred; and it thus became quite clear that the losses were increasing and the shipping position was becoming increasingly serious. The details published in America made it clear that the enemy was concentrating his attacks chiefly upon tankers. The object of that policy was quite clear, since the Allies' power to continue their war effort in Europe depends upon the constant and steady supply of oil fuel from the other side of the Atlantic. The greatest service U-boats could do to the Axis cause would be to interrupt that supply.

A curious incident occurred on the other side of the Atlantic. On

January 9 a German broadcast alleged that Allied forces had "cut out" a ship from the neutral port of Portuguese Fernando Po. The Admiralty at once announced that no British or Allied forces had been anywhere near Fernando Po, and denied that any Allied forces were concerned in the incident. Warships were sent to investigate, however, and they located the Italian 8,000-ton liner *Duchessa D'Aosta*, "in difficulties" on the high seas, and promptly captured her.

In Home waters it became evident that in the judgment of the British authorities the repairs of the German ships, *Scharnhorst*, *Gneisenau*, *Prinz Eugen* at Brest were nearing completion, for British air attacks on that port were once more intensified. Brest was bombed on no fewer than twelve separate days in January, presumably every day upon which the weather made such attacks possible. Subsequent events seemed to show that the bombing was not very successful.

On January 6 a joint naval and R.A.F. raid was made on Helle Fjord in Norway, about 100 miles north of Bergen, for the purpose of destroying the fish-canning factory there and any enemy shipping that was to be found working in connection with it. Destroyers under Captain P. Todd spent some hours working close inshore in the inner channels, searching them for shipping. They were protected by long-range fighters of the Coastal Command and also by an attack on the enemy aerodrome of Sola, near Stavanger, by aircraft of the Bomber Command. The enemy was apparently taken by surprise and there was little opposition.

On January 18 and 21 single German aircraft dropped bombs in the Shetland Islands—mere nuisance raids apparently, which caused a small number of casualties and did no damage of any moment.

On January 26 it became known that the new battleship *Duke of York* had been put into service. Events in the Mediterranean during the month were all concerned with naval support of the westward advance of General Auchinleck's army. As before, the army's supplies as it advanced along the coast were carried by sea and the prisoners and booty captured by it were largely taken back by the same way. The enemy made every effort to interrupt this traffic, the Italian Navy having been reinforced for that purpose by a number of German U-boats. On January 2 Admiral Sir Andrew Cunningham disclosed that three U-boats had recently been destroyed in these attempts by the destroyers *H.M.S. Farndale*, *Kipling*, *Hasty* and *Hotspur*, 40, 50, and 50 prisoners respectively being taken. It was noteworthy that relations between Germans and Italians so captured were exceedingly strained. The Germans were truculent and demanded to be separated from their Italian allies in the destroyer by which they had been picked up. When informed that if they disliked Italian company, they could get back into the sea whence they had been rescued, the demand was dropped.

British submarines and aircraft kept up a constant offensive against Axis communications, which were carried by sea chiefly to Tripoli. On January 11 a British submarine in the Ionian Sea sank a large transport laden with troops and a supply ship of medium size. Two days later it was reported that another submarine had sunk the Italian minesweeper *Santo Pietro* and severely damaged a 5,000-ton supply ship. On the night of January 17 naval aircraft torpedoed a tanker and one of the two destroyers which were escorting her in the central Mediterranean, but darkness and bad weather prevented observation of the final result. On January 2, R.A.F. bombers attacked Naples and it was reported that

half the arsenal there had been destroyed. On January 23, naval torpedo aircraft and R.A.F. bomber and torpedo aircraft located an important Italian convoy and attacked it repeatedly both by day and night. The convoy consisted of one 20,000-ton troop-ship and three other large transports; it was protected by a battleship, four cruisers, and fifteen destroyers. During January 23, both bomb and torpedo attacks were concentrated on the battleship, but their results could not be observed. During the night, naval aircraft hit the troop-ship with one torpedo and a destroyer with another. Later the battleship and the troop-ship were both hit by bombs and it was believed that a cruiser and two merchant ships were also hit. The naval aircraft in the second attack made two more hits on the troop-ship. The next day the convoy was again sighted steaming at a much reduced speed and as there was nothing to be seen of the troop-ship it was hoped that she had been sunk. On January 26 the Admiralty announced that two enemy tankers had been sunk by British submarines and that two medium-sized transports in a convoy of three, with the Italian salvage-ship *Rampino*, had also been torpedoed.

Throughout the month the enemy, evidently in the attempt to hamper these operations by British light craft and aircraft in the central Mediterranean, kept up a constant air offensive on Malta. It was countered by the indomitable defence of the garrison and it in its turn provoked a number of British air attacks on the Sicilian air-fields whence the enemy bombers started.

In the Indian Ocean it was officially announced in Rangoon on January 25 that two merchant ships had been sunk by enemy action, but whether that meant by submarine, surface ships, or aircraft was not specified.

Early in January General Wavell was appointed to the supreme command of the Allied forces of all arms in the East Indian Archipelago and south-west Pacific, with his headquarters in Java. The Allied naval forces of the same area were put under the command of Admiral Hart, of the United States Navy, formerly in command of the United States Asiatic squadron. Vice-Admiral Sir Geoffrey Layton, who had resumed the command of British naval forces of the Eastern Fleet after the death of Sir Tom Phillips, joined General Wavell at his headquarters.

The war at sea in the Pacific during January consisted of a series of combined operations by the Japanese, aimed at the complete occupation of the East Indian Archipelago. At the beginning of the year the Japanese were already firmly established in Sarawak and Western Borneo; during January they extended their occupation to Eastern Borneo and the island of Celebes. On January 10 they landed on the island of Tarakan, an important oil centre, and at the same time near Menado in Celebes. On January 23 Dutch air forces located a large Japanese convoy of transports, escorted by cruisers and destroyers and at least one seaplane carrier, moving south through the Macassar Strait, evidently making for Balikpapan, the other important oil port in Dutch Borneo. All Allied sea and air forces within reach went to the attack. Dutch and American submarines and aircraft attacked continuously from January 25 to 30, supported on January 24 by American aircraft, which were presumably operating from Dutch airfields. That night an American squadron of cruisers and destroyers made contact after dark and sank at least five transports without loss to themselves.

As always happens in night actions, or in air and submarine attacks on ships by day, there was considerable uncertainty about the actual

results achieved. Direct hits on several large warships, probably cruisers, though one of them was believed to have been perhaps a battleship or aircraft carrier, were reported to have been made, and some of the ships hit were reported to have been "set on fire and left listing heavily." It seems certain that seven or more transports were sunk; but it is doubtful whether any Japanese warships in these operations were actually sunk, though undoubtedly a number were damaged more or less severely. The Japanese, however, were undeterred by their heavy casualties, and were able to complete the occupation of Balikpapan, Macassar, and the remainder of the island of Celebes. At the end of the month they extended their attacks to the important Dutch naval base of Amboina in the Moluccas.

The Japanese advance southwards through Malaya continued. On January 26, a fresh landing was made at Endau, on the east coast of Malaya, eighty miles north of Singapore. The landing was opposed by R.A.F. bombers, which reported hitting a transport and a cruiser, and by the destroyers H.M.A.S. Vampire and H.M.S. Thanet, which gallantly attacked the escort, a greatly superior force consisting of three Japanese destroyers besides the cruiser. One enemy destroyer was sunk and another damaged as the Japanese retreated; but the Thanet was also sunk though the Vampire suffered neither damage nor casualties.

Farther east, Japanese air attacks were made on Rabaul on January 4, while two days before Australian air attacks had been made on the Japanese base at Kapinga Marangi. On January 20 Rabaul was again raided by Japanese flying boats and both shore-based and carrier-borne aircraft. Kavieng in New Ireland was attacked the following day. On January 22 a Japanese convoy was observed approaching Rabaul in the afternoon and communication with the place ceased shortly afterwards, though it is known that Australian forces held out for some days longer in the hills west of the town. By January 26 the Japanese were in full possession of Rabaul and it was also reported that they had landed at more than one place in the island of Bougainville, the northernmost of the Solomons.

During January the loss was reported of two cruisers, the Neptune and the Galatea, both in the Mediterranean, the destroyers Kandahar, Stanley, Vimiera, and Thanet, the submarine H.31, the auxiliary aircraft carrier Audacity, the corvette Salvia, and three armed trawlers.

FEBRUARY.

Losses of shipping off American Atlantic coast continued to be serious, ranging from the coast of Nova Scotia to the Caribbean. Full details of them were not officially announced but were allowed to leak out from time to time. Tankers, for instance, were sunk off the American coast on February 2, 6, 22, 24, and other dates. On February 17, one or more U-boats attacked shipping off the Dutch islands of Aruba and Curacao, where so much of the crude oil from Venezuela is refined. The attack was made in the small hours of the morning when the U-boats approached on the surface, torpedoed and sank seven tankers which were lying in the roads, and shelled the oil refineries on shore. American aircraft at once counter-attacked the U-boats and reported that they believed they had sunk one or more of them; the report was perhaps optimistic through inexperience. Two days later another tanker was torpedoed by a U-boat off Aruba and two ships were torpedoed by another in the gulf of Paria.

On February 25 Colonel Knox, the Secretary of the Navy, stated that since January 14, when the U-boats extended their operation to the American coast, 114 ships of the United Nations had been attacked there. Fifty-six attacks had been made by the United States Navy on U-boats, with the result that three had been sunk and four others damaged.

The American Navy suffered some losses during the month. The coast-guard cutter *Alexander Hamilton* was damaged by a U-boat off Iceland and could not be got into harbour. The destroyer U.S.S. *Truxtun* and the naval auxiliary *Pollux* were wrecked on the east coast of Newfoundland in bad weather with heavy loss of life. On February 28 the destroyer U.S.S. *Jacob Jones* was sunk by a U-boat and only eleven of her company survived.

In home waters the chief event of the month was the departure from Brest of the German warships *Scharnhorst*, *Gneisenau*, and *Prinz Eugen*, their passage up Channel and return to German ports. Air attacks on Brest were made on February 6 and 10. On the night of February 11, four days before the new moon, they put to sea from Brest in thick and stormy weather without being observed by any British forces. This was not surprising, since any sort of continuous observation patrol off the port is quite impossible in modern conditions; and even if it were possible, in the weather that obtained they might well evade observation at night. They steamed up Channel at high speed protected by a large force of aircraft working from the air-fields of northern France and the Low Countries. Although it was known that their departure was a possibility—that may be inferred from the resumption of the air attacks upon them—and in spite of their strong escort, they were not observed until 11.35 a.m. on February 12, when they were off Cape Gris Nez, almost at the narrowest part of the Dover Strait. The most favourable time for attack was then past, but the forces assembled for that purpose nevertheless at once went in to the attack.

The first attack was made by six *Swordfish* of the Fleet Air Arm, which had been intended not as an advance guard of the attacking forces but merely as a reinforcement, to come into action while the enemy was fully engaged with more powerful and up-to-date forces. Not one of the six *Swordfish* aircraft, which were under the command of Lieutenant-Commander Esmonde, returned from that attack. Motor torpedo boats from Dover were just able to deliver a long-range attack in the Dover Strait before the enemy drew out of reach. Bombers of the Bomber Command and torpedo-carrying *Beauforts* of the Coastal Command attacked in large numbers; it is not known whether they succeeded in inflicting any damage on the enemy but 20 of them, victims of either German A.A. fire or of the German fighter escort, did not return. Finally, two destroyer flotillas from the North Sea just managed to get in an attack while the enemy was off the Dutch coast. Low visibility and heavy rain squalls enabled them to get in to close range before firing their torpedoes. It was believed that they achieved some six hits with torpedoes, either on the German ships or on the German destroyers which were escorting them. But the enemy was not stopped and drew off into the failing light to reach the shelter of German waters during the night.

No more humiliating incident has occurred throughout the war and the profound disappointment which was widely felt in the country was expressed in no uncertain terms in Parliament. A Court of Inquiry designed to ascertain the full facts was set up by the Prime Minister under Mr. Justice Bucknill assisted by Admiral Sir Hugh Binney and

Air Marshal Sir Edgar Ludlow-Hewitt. Its report, which was rendered in due course, went to the Government only ; it could not be published, of course, since it must have dealt with details of defence and war organisations. The full story of this disturbing incident can only be told after the war.

On February 23 the Prinz Eugen was sighted by H.M. submarine Trident, steaming north off the coast of Norway evidently with the intention of joining the battleship Tirpitz, which had been in Trondheim since February 20. The Trident attacked and hit the Prinz Eugen with at least one torpedo, damaging her aft so that she could not steam. She was taken into Trondheim by tugs. The Scharnhorst and Gneisenau were both located under repair in German yards soon after their arrival, from which it seemed probable that they had received some damage from the attacks made on them during their passage.

Early in the morning of February 4 light forces, including one ship of the Polish Navy, intercepted a convoy of two fully-laden enemy supply ships off the Channel Islands. They engaged at close range, sank both ships and withdrew without casualties or damage.

On the night of February 19 E-boats and aircraft attacked a British convoy in the North Sea. At least one E-boat was bown up and sunk and all were driven off by the destroyers Holderness, Mendip, and Pytchley, and the armed trawler Turquoise. Eighteen enemy seamen were picked up. One Dornier 217 was shot down by the Fighter Command squadron which was protecting the convoy. Three others and a Junkers 88 were severely damaged. No casualties or damage were suffered by the convoy or by the ships or aircraft of the escort.

On February 27 a raid was made on the German radio-location post at Bruneval, near Havre. Some troops were landed from the sea and others were dropped by parachute. The radio-location station was put out of action, a number of prisoners were taken and the British forces re-embarked successfully some two hours after the first landing was made.

In the central Mediterranean, naval aircraft torpedoed four supply ships and a tanker in the first week of the month ; it was believed that all five were destroyed but their actual sinking was not observed. In the same period submarines sank two enemy supply ships and torpedoed a third, which was also probably sunk. One submarine had a gun battle with an enemy armed trawler. The trawler's crew were forced to abandon ship, but the submarine was compelled to dive by the fire of enemy shore batteries.

Between February 13 and 16 a convoy was sent from Alexandria to Malta, losing two ships by air attack on the way. Part of the Italian Fleet put to sea in the attempt to intercept it but did not in fact succeed in making contact. An Italian *communiqué* announced that they had sunk seven merchant ships, a destroyer and a torpedo boat, and had damaged five cruisers, two destroyers and eight merchant ships, with the loss of only two Italian aircraft. Rarely have even Italian announcements been so fanciful. Actually the chief losses were on the Italian side. A squadron was attacked on the night of February 14 by naval aircraft which hit two cruisers and one destroyer with torpedoes. One of these cruisers was seen to be on fire and severely damaged. Later a British submarine also attacked as the Italian force was returning to harbour, and hit another 8-inch cruiser with two torpedoes. The final result of these attacks could not be observed.

Later in the month the Admiralty announced further successes by a British submarine, which had made three hits with torpedoes on a convoy of three supply ships.

In the East Indies the unbroken flow of Japanese successes continued. On February 9 the Japanese crossed into the island of Singapore and six days later the campaign in Malaya came to an end with the capitulation of the Singapore garrison. On February 24 and 26 Japanese air attacks were made on the Andaman islands in the Bay of Bengal evidently as a prelude to their occupation and to the attack on Burma.

In the Netherlands East Indies the Japanese conquests were steadily extended, resisted to the full extent of their power by the Dutch forces stiffened by such reinforcements as could be spared from other theatres by the British and American navies. On February 6 the Japanese announced that two days before, their air forces had located the main Dutch fleet at sea north of Java and had sunk two Dutch cruisers and damaged another and also damaged an American cruiser of the Marblehead class. This account was entirely fanciful; no Allied ship was sunk, though some suffered damage. This report was amplified a week later in the light of later reports from the Dutch forces engaged. It was then stated that three Japanese cruisers, one destroyer, and one submarine had been sunk in the fighting off Amboina; but those losses had not prevented its occupation by the Japanese, who thereby became possessed of the second Dutch naval base in the Indies. On January 19 the Japanese admitted damage to no fewer than 61 of their transports at sea in addition to those—a substantial number—known to have been sunk. The Dutch estimate of Japanese transports sunk up to February 14 was 52, together with 23 supply ships or other auxiliaries, and over 40 damaged.

On February 20 the Japanese landed in Bali and Portuguese Timor. On February 27 they landed at three places on the north coast of Java, five divisions strong. The approach of the Japanese expedition was reported by air reconnaissance and all available Allied warships, under the command of Admiral Doorman, of the Royal Netherlands Navy, put to sea to the attack. Admiral Doorman's flag was in the *De Ruyter*, cruiser, and he had with him four other cruisers, the Dutch *Java*, the British *Exeter*—of River Plate fame—the Australian *Perth*, and the American *Houston*, together with the Dutch destroyer *Kortenaer* and the British destroyers *Jupiter*, *Electra*, and *Encounter*.

At 4 o'clock in the afternoon a Japanese squadron was encountered consisting of at least two 10,000-ton cruisers of the *Nati* class, a number of other cruisers and some 13 destroyers. This force had obviously been interposed between the Japanese transports and the Allied squadron. The cruisers at once engaged and at the same time the Japanese destroyers, working in two separate flotillas, made torpedo attacks. The first was repelled by gun fire but the second was able to fire torpedoes, one of which hit the *Kortenaer* and sank her. About the same time the *Exeter* was hit in a boiler room by an 8-inch shell and her speed was thereby so much reduced that she was unable to keep up with the other ships and dropped out of the action. She returned independently to Sourabaya to make repairs.

Having fired their torpedoes, to protect their withdrawal the Japanese destroyers laid smoke which hid the opposing squadrons from one another. The Allied destroyers, of which there were only the three British left, at once counter-attacked through the smoke. The *Electra* found herself

closely engaged with three of the largest class of Japanese destroyers and she was sunk after a gallant fight. Fifty-four of her company were picked up the next day by an American submarine, transferred that evening to a Dutch minesweeper, and eventually reached Australia. The Jupiter had a brief engagement with two Japanese destroyers, then lost sight of them in the smoke. Neither she nor the Encounter was able to fire torpedoes at the Japanese cruisers.

As the Allied cruisers drew clear of the smoke they again engaged the Japanese and one of the Japanese big cruisers was seen to be on fire from the hits she had received. The Allied ships at that time suffered no further damage, but the failing light enabled the enemy to disengage. Admiral Doorman continued his efforts to gain contact with the Japanese transports. After dark he engaged four enemy ships, believed to be cruisers, but was unable to work round them towards where he believed the Japanese transports to be. He therefore turned back towards the coast of Java and swept westwards along it in order to locate the landing. While so doing he twice engaged Japanese ships, and in one of these engagements the Jupiter was hit by a torpedo and disabled; she sank some four hours later, but most of her company got ashore in Java. About midnight off Rembang the cruisers again engaged Japanese ships. While altering course during this engagement the De Ruyter and Java were both hit at the same moment by either torpedoes or mines, and sank almost at once. The other ships continued the action, and though they received some damage it was believed that they inflicted more on the enemy. Reports indicated that one Japanese 8-inch-gun cruiser, one 6-inch cruiser of the Mogami class, and a destroyer were sunk; a second 8-inch cruiser was damaged and three more destroyers were left disabled, either on fire or sinking. Nevertheless the Japanese preponderance of forces was such that they could afford these losses and still attain their object.

H.M.A.S. Perth and U.S.S. Houston after the action went into Tanjong Priok to refuel, leaving again after dark the next evening with the intention of passing through the Sunda Strait at night. The moon, however, was nearly full. Both ships encountered a strong Japanese force on their way to the Sunda Strait and nothing more was heard of either.

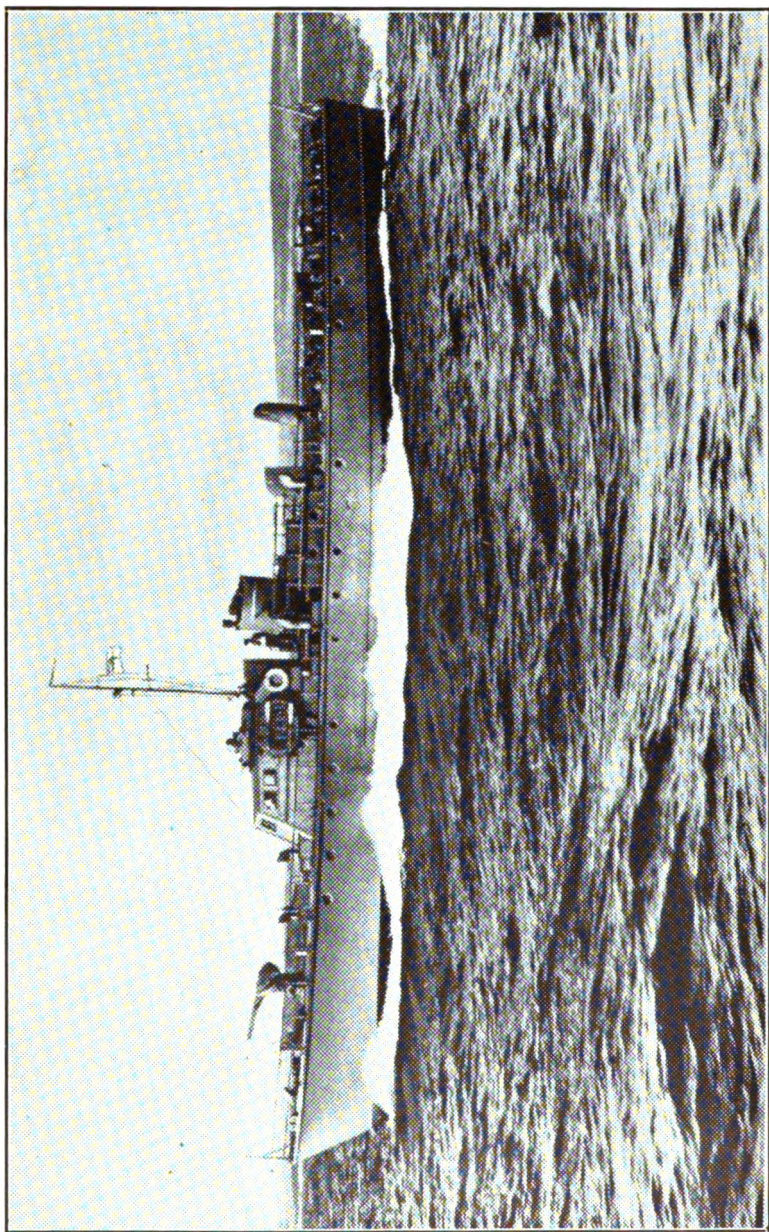
The same night H.M.S. Exeter with the Encounter and the American destroyer U.S.S. Pope left Sourabaya with the object of reaching Australia. One of her boiler rooms, however, was still out of action and she could steam at no more than half power. The following day a signal was received from her saying that three Japanese cruisers were approaching. Nothing more was heard either from the Exeter or from the destroyers in company with her. The whole of the Allied squadron defending the Dutch Indies was thus destroyed.

On February 16 Japanese aircraft attacked Allied shipping in the Timor Sea. On February 19 Darwin, on the Australian mainland, was raided twice, the first time by 72 twin-engined bombers and the second by 21. Considerable damage was done to shipping and shore installations. On February 20 more Japanese landings were made in Timor, whence it is to be supposed the attack on Darwin came.

Farther east the Japanese continued to extend their occupation in the Bismarck Archipelago. On February 9 they landed at Gasmata on the south coast of New Britain, where there is a practicable air-field. They made air raids on Port Moresby, the principal Australian base on the southern coast of New Guinea, on February 4 and 5. They also dropped



Corvettes of the Royal Canadian Navy.



"Fairmile" motor-boat for anti-submarine work of the Royal Canadian Navy.

bombs at Tulagi in the southern Solomons on February 2. These attacks evidently indicated the intention to work southwards towards Australia itself. Counter-attacks were made whenever practicable by the Australians on the air-fields at each place in which the Japanese had established themselves. One successful attack was reported at Gasmata on February 11, two Japanese transports lying there being hit.

Losses reported in addition to those already enumerated in the East Indies were the destroyers Matabele, Gurkha, and Belmont; the submarine Triumph; the corvette Culver—a former American coast guard cutter—and two armed trawlers.

MARCH.

The Western Atlantic continued to be the chief theatre of U-boat activity, and the U-boats extended their operations more particularly to the Caribbean, possibly calculating that defence measures would be more fully developed on the coast of the United States themselves than further south. On the night of March 2 a U-boat bombarded the American island of Mona and during the night of March 9 a similar attack was made on the harbour of Castries, in St. Lucia. There, a number of ships in harbour were damaged but none were sunk.

During the month a number of ships belonging to South American powers were sunk in these waters and much indignation was expressed in Brazil, Chile, and Uruguay. At Montevideo the German ship Takoma was seized by the Uruguayan Government as compensation for the Uruguayan merchant ship Montevideo, torpedoed by a U-boat off Haiti. The Takoma will be remembered as the tender to the Graf Spee.

On March 18 Colonel Knox, Secretary of the Navy, announced in New York that in the next two months there would be a considerable increase in the anti-submarine patrols of the United States eastern coast. At the end of the month it was also announced that all air forces, whether of the Army or Navy, operating against U-boats, had been placed under a unified command. On March 26 Mr. Churchill in a public speech stated that, "The battle of the Atlantic, upon which all the time our power to live and carry on the war effort depends, after turning markedly in our favour for five or six months, is now for the time being—and only for the time being—worsened again."

In home waters the German battleship Tirpitz made her first appearance at sea. On March 9 air reconnaissance ascertained that she had left Trondheim and was steaming north up the coast of Norway, evidently with the intention of attacking a British convoy then on the way to north Russia. She was attacked by torpedo aircraft from H.M.S. Victorious and at once returned to the shelter of Norwegian fjords under cover of smoke. It was not possible to observe with certainty whether the attack succeeded in damaging her, nor for the Home Fleet under Admiral Sir John Tovey to gain contact and engage her before she regained the shelter of Norwegian waters. On March 20 it became known that she was back again at Trondheim in company with the pocket battleship Admiral Scheer and the cruiser Prinz Eugen, the last-named still disabled.

A number of engagements between light forces occurred during the month. On March 1 an enemy convoy of two tankers was located in the Channel and attacked by M.T.Bs. which were briskly engaged both by the escort and the shore defences. One tanker was disabled and the

other may have been hit ; fog prevented full observation. On March 14 two E-boats were sunk by British light forces in the Channel. The same night E-boats attacked a British convoy in the North Sea but were driven off. Three of them were sunk and two more damaged. No ship of the convoy was damaged, but H.M. destroyer Vortigern was hit by a torpedo and sank. Four E-boats returning towards their base in daylight the next day, were located by Spitfires which at once attacked, set one on fire and severely damaged the other three. Since other aircraft, going to the attack later, failed to locate these craft but found much wreckage and many bodies in the sea it seems probable that all four were destroyed.

On March 20 a German patrol boat was sunk in the Bay of Biscay by aircraft of the Coastal Command. On March 27 three motor gunboats encountered a German armed trawler in the North Sea and sank her, without casualties or damage to themselves.

In the small hours of March 28 one of the most effective raids of the war was made on St. Nazaire at the mouth of the Loire on the French Atlantic coast, by light naval forces, commandos and aircraft of the R.A.F. The importance of St. Nazaire lies in its use as a U-boat base and in the fact that it possesses the only dock outside Germany capable of taking the Tirpitz. This dock, which was built for the liner Normandie, opens directly into the river estuary at one end and the big basin of Penhoet at the other. The attack started with bombs from the air, intended to distract attention from the sea-borne attack ; troops were carried in H.M.S. Campbeltown—formerly the U.S. destroyer Buchanan—whose bows had been specially strengthened and filled with five tons of high explosive. She steamed into the estuary at slow speed so as not to attract attention, and increased to high speed as she approached the dock gate, cut through the torpedo nets and rammed the gate with such force that when she came to rest her bridge was level with the sill. She was then scuttled by her company, who lit the delay action fuses of the big explosive charge before abandoning ship in the motor-boats which had accompanied her to take them off. At the same time the commando troops she carried landed in order to demolish the dock-working machinery and other important installations of the port.

The big explosive charge blew up some three hours later, completely wrecked the dock gate and damaged the dock itself, effectively putting it out of action for many months. M.T.Bs. which accompanied the Campbeltown fired torpedoes into the gates of the other basins. Not many of the troops who had landed were able to re-embark ; it appeared that they were too closely engaged for that to be possible. But the naval forces had to withdraw at the pre-arranged hour, taking those who were able to rejoin them. As they left the estuary they were attacked by five large German 600-ton torpedo boats which, however, were at once engaged and driven off by British destroyers covering the withdrawal of the motor-boats. The raid appeared to create panic amongst the German garrison of St. Nazaire, for as the British motor-boats withdrew shore defences were observed to be heavily engaging a German flak ship moored in the estuary for its defence.

At the end of the month a British convoy for Murmansk was attacked by both surface ships and submarines in the Arctic. The ice of the Arctic Sea at that time of year restricts the routes that are possible for shipping and so facilitated location of convoys by the enemy. The convoy was attacked on March 29 by German destroyers which were engaged by

H.M.S. *Trinidad* and British destroyers. The weather was bad, frequent snow storms making visibility poor. The *Trinidad* and the destroyer *Eclipse* each disabled one enemy destroyer by their fire; they were not able to observe the final result owing to action continuing with other destroyers, but the Germans admitted the loss of one destroyer. Both the *Trinidad* and the *Eclipse* suffered some damage but returned to harbour safely. The convoy reached its destination.

In the Mediterranean, Palermo was bombed on March 2; Tripoli and Benghazi were bombed every night that weather would allow. This bombing of the two ports on which the enemy chiefly relied for his supplies must have hampered them considerably. But it never interrupted them altogether, since as long as they were in enemy hands, shipping targets in the harbours were always to be found, however heavy previous bombing had been.

Air and submarine attacks on Axis convoys crossing the Central Mediterranean were made at every possible opportunity. On March 9 aircraft of the R.A.F. attacked a convoy and hit a cruiser, a destroyer, and a merchant ship with torpedoes. Naval aircraft repeated this achievement the following day. On the night of March 17 and 18 both forces attacked another convoy alternately and torpedoed ships in it. On March 23 the Admiralty issued a description of a number of successes achieved by British submarines; two U-boats, two supply ships, six schooners and a small transport laden with troops had been sunk.

The chief event of the month in the Mediterranean, however, was the successful defence by a force of cruisers and destroyers under the command of Rear-Admiral Vian of a convoy sent from Alexandria to Malta, against an Italian Fleet which comprised not only heavy cruisers but a battleship. The convoy left Egypt in thick and stormy weather about March 20. Unfortunately the weather cleared while it was still off the coast of Cyrenaica and it was located by enemy air reconnaissance. On the afternoon of March 22 an enemy squadron of four cruisers appeared, evidently bent on attacking the convoy. Admiral Vian at once attacked and the enemy, although superior, broke off the engagement and retired; but it was impossible for Admiral Vian to pursue them for long, since he was responsible for defending the convoy from which he could not therefore get too far away. A few hours later the enemy returned to the attack reinforced by two 10,000-ton cruisers and the battleship *Littorio*. Again, notwithstanding the enemy's material superiority, Admiral Vian attacked without hesitation. His destroyers, in the course of a gallant and effective daylight torpedo attack on the enemy's heavy ships, closed to within three miles of them. The battleship *Littorio* herself was hit, not only by at least one torpedo but by the 4.7-inch guns of the destroyers and the 5.5-inch guns of the British cruisers; a fire broke out on her quarter-deck. The Italians found this too much for them. They broke off the action and once more retired without gaining contact with the convoy. The cruiser *Penelope* and three British destroyers suffered some damage, but casualties were not heavy and they all returned to harbour.

The convoy's troubles were not yet over, for although the Italian Fleet made no further attempt to attack it, its progress was delayed by a heavy gale which sprang up and it was subjected to continuous and heavy air attack during the remainder of its protracted voyage. One ship of the convoy was damaged and sank later and the destroyer *Havock*, which had been damaged in the action the day before, received some more

damage; she reached harbour, however. For his gallant and very skilful conduct in attacking and driving off a force by which, by every material standard, he was completely out-matched, Admiral Vian was shortly afterwards awarded a K.B.E.

One of Admiral Vian's ships, the cruiser *Penelope*, suffered considerable damage during the convoy operation, and had to be temporarily repaired at Malta before she moved elsewhere. The fortnight she was there was the period of most intensive air attack that the island experienced, and the ship herself was the target for most of the attacks. The ship's company, while labouring strenuously to complete the essential repairs, were at A.A. action stations all day and every day; and though the ship had no direct hits, much superficial damage was done and she was riddled with splinter holes. There were a number of casualties, the captain, wounded, being amongst them. She left Malta on schedule, however, after nightfall, but was the target for many air attacks the next day as she steamed westwards. She was shadowed throughout the day, as long as she was within range of Italian airfields. Three separate bomb attacks were made in the forenoon, the first by a Ju.88 and four Italian, the second by four Italians again, and the third by a single bomber. A few minutes after noon, six torpedo-aircraft attacked, but in spite of her defects, the *Penelope* was able to avoid all the torpedoes. Fourteen Ju.88's then made a dive-bombing attack—no hits—and an attack by a single Ju.88 just before she passed out of range was no more successful. The Captain was decorated for his conduct.

On March 5 Vice-Admiral Sir Geoffrey Layton assumed the duties of Commander-in-Chief Ceylon with jurisdiction over all forces, land, sea, and air, in that Colony. His former position had become anomalous when all allied naval forces in the area of the Dutch East Indies were put under the command of the Dutch Admiral Helfrich, in succession to the American Admiral Hart. At the same time, though the appointment was not publicly announced until over a month later, Admiral Sir James Somerville was appointed to command the newly constituted Eastern Fleet, the composition of which was of course not made public. It became known later, however, that it comprised battleships of the *Warspite* and Royal Sovereign classes, aircraft carriers, cruisers, and destroyers. Vice-Admiral Sir Geoffrey Arbuthnot, who had been Commander-in-Chief of the former East Indies Station, returned home, as his station had been absorbed in the sphere covered by the New Eastern Fleet. No event of outstanding interest took place in the Indian Ocean during the month, except that on March 1 Japanese aircraft from Java made a raid on Christmas Island. But farther east, in the East Indian Archipelago, the Japanese continued their systematic occupation of the remainder of the Dutch East Indies. There was no further opposition at sea, the whole Allied forces having been wiped out in the battle of the Java Sea. But Dutch military forces continued to hold out for many months in the islands, while Allied forces working from Australia put up all the opposition of which they were capable. After the Java Sea battle a number of Allied merchant ships left Tjilatjap off the south coast of Java on March 1 and 2, escorted by the sloop H.M.A.S. *Yarra*. On March 4 they encountered a Japanese squadron of three heavy cruisers and two destroyers, and though the *Yarra* fought bravely, she and the whole convoy were sunk. The British destroyer *Stronghold* and the American destroyers *Pillsbury* and *Edsall* were lost at this time, presumably in very similar circumstances.

Farther east the Japanese, working from New Britain, continued to bomb Port Moresby at intervals. On March 7 they landed in New Guinea and occupied Lae, the capital of Australian New Guinea, and Salamaua nearby, both of which possess good airfields. This Japanese advance was resisted by air forces only, but the resistance was very effective. The Australians had been reinforced some time before from the United States, and when, three days after the Japanese landing in New Guinea, the enemy appeared to be assembling at Lae and Salamaua a strong expedition for a further advance, the counter-stroke was made simultaneously on the aerodromes, the transports and the warships. The results of the counter-attack were difficult to ascertain with certainty, but according to the report issued from the headquarters of General McArthur, who had taken command of the Allied forces in Australia, they were believed to be as follows : two Japanese heavy cruisers sunk ; one light cruiser probably sunk and two others severely damaged ; a further light cruiser damaged ; one destroyer probably sunk and three others damaged, two of which may possibly have sunk. Five transports destroyed ; two more hit by bombs, three others damaged and one set on fire ; one aircraft tender severely damaged ; two gunboats and a minesweeper probably sunk. Many small craft were destroyed and much damage was done to the air establishments, aircraft on the ground and anti-aircraft batteries. The enemy preparations were so much disorganized by the severe damage suffered that they made no further move for the rest of the month, but Japanese air forces continued to raid New Guinea throughout the month and Allied forces to raid Lae, Salamaua, Gasmata, and Rabaul.

Checked in New Guinea the Japanese nevertheless continued to extend their occupations farther east. On March 2 they dropped bombs on Tulagi, the only really good harbour in the southern Solomons. On March 10 they landed at Buka in Bougainville, the northernmost of the Solomon islands, and a week later they bombed Tulagi again. American submarines were active in Japanese waters though their numbers were small. On March 4 an American raid was made on Marcus Island in the Bonin group, only 990 miles from Japan itself, by aircraft and naval forces under the command of Vice-Admiral Halsey.

Besides the ships of which the losses have been mentioned above, the following were announced during the month : The cruiser *Naiad*, believed to have been lost in the Mediterranean, where she was known to have been in service some months before ; the corvette *Arbutus*, and two armed trawlers.

APRIL.

Shipping losses in the Western Atlantic continued to be heavy during April. The Germans announced that they amounted to 76 ships of a total of 585,000 tons, and although that was undoubtedly an exaggeration there is no doubt that the losses were definitely above the danger mark. On April 20 the Argentine Government announced that the new 12,500-ton Argentine tanker *Victoria* had been damaged by a torpedo or mine 300 miles off Cape Hatteras, while on a voyage from Buenos Aires to New York. The Germans at once alleged that she must have hit an American floating mine. The United States Navy Department stated that there was no doubt that the ship had been torpedoed by a U-boat.

In Home Waters there was a lull in the coastal operations of light craft, probably due to unfavourable weather. The offensive against

enemy coastal traffic, however, was continued by air forces. On April 6 aircraft of the Coastal Command hit two Axis supply ships, one with a torpedo and the other by bombs, off the coast of Norway in bad weather. On April 8 similar attacks were made off the coast of Jutland. On April 17 the docks at Havre and the submarine base at Lorient were attacked. Havre was again attacked on April 17; so were Hamburg and the submarine base at St. Nazaire. On April 27 the naval base at Trondheim was the chief target and aircraft of the Coastal Command attacked a convoy off the coast of Denmark.

The Prime Minister, on April 18, announced in Parliament reorganization in the arrangements for inter-service collaboration. The "Combined Operations" Organization had been in the charge of Admiral of the Fleet Sir Roger Keyes up to October 10, 1941. On that date Captain Lord Louis Mountbatten took over, with the title of Advisor on Combined Operations and the rank of Commodore. On March 18, 1942, his title was changed to that of Chief of Combined Operations, he was promoted to the acting rank of Vice-Admiral and given also the honorary rank of Lieutenant-General and Air Marshal. The Prime Minister also announced that the Chief of Combined Operations attended meetings of the Chief of Staffs Committee when any special matters with which he was concerned were under discussion.

On April 1 eleven Norwegian ships, which were on lease to the British Government but had been taking shelter in the Swedish port of Gothenburg since the German invasion of Norway, put to sea in the endeavour to reach England. The Germans had been keeping a watch on them and discovered their departure, in spite of snow and fog on which they presumably relied for concealment. Two of the ships were sunk and two others put back to Gothenburg. On April 5 the British Government announced that some of the ships had arrived in this country; and a German announcement of April 8 stated that six of the ships had been sunk. One thing is certain, and that is that none of them was captured by the enemy.

In the Mediterranean the enemy attacks on Malta eased off at the beginning of the month but were resumed in as great force as ever after a short lull. The island had its two thousandth alert and the biggest raid of the year on April 7, but the enemy's losses were heavier than ever. On April 23 a German airman gave the following description in a broadcast: "Malta is one huge battery of A.A. guns. The shells come up like a thunderstorm of steel. When the guns cease, Spitfires and Hurricanes hang on to the tails of the German dive-bombers, trying to shoot them down during the dive. The British gunners shoot well, and the German aircrews need the highest skill and courage to get through." At the end of March the Malta defences had shot down 117 enemy aircraft in 12 days; during April they shot down some 130 more. The enemy showed himself in his true colours in these attacks, for during the month he concentrated chiefly on villages, historic buildings, and hospitals; but not even that could daunt the spirit of the Maltese. On April 17 it was announced that the King had awarded the George Cross to the island.

On April 7 it was announced that the destroyer Havock had been wrecked on the coast of Tunisia. The Havock had been in Admiral Vian's convoy action where she suffered considerable damage and had afterwards come under heavy attacks while repairs were being executed in Malta. She was on passage westward at the time and was carrying a number of passengers, officers and men, besides her ships company at the time. The

ship became a total loss, but there was only one casualty ; all the remainder got ashore where they were at once interned by the French, being sent to a prison camp at Laghouat in Algeria, where they were treated more as prisoners of war than as internees. By rights, as shipwrecked mariners, they ought to have been released and not detained at all.

On April 9 it was announced that an Italian 10,000-ton cruiser, escorted by destroyers and aircraft, had been torpedoed and sunk in the central Mediterranean by a British submarine commanded by Lieutenant-Commander Tomkinson. The next day further successes by another British submarine, Lieutenant-Commander Francis, were announced ; two supply ships were sunk and another one damaged. On April 17 the sinking of a transport was reported and on April 28 of an ammunition ship and a petrol carrier, a minesweeper, and a fully loaded schooner. There is no doubt that these operations had an important influence on the course of the armies operations in Libya.

On April 17 Italians announced that British forces had been repulsed in attempting to land on a small island south of Crete. No details of the raid were published on the British side. On April 20 the Italians announced the loss of the submarine Michele Bianchi.

On April 28 Mr. Roosevelt in a broadcast mentioned that American warships had been in action all over the world, including the Mediterranean. It was only later that it was revealed that it was the American aircraft carrier Wasp which had been in the Mediterranean, for the purpose of replenishing the garrison of Malta with fighter aircraft.

During the month the war spread to the Indian Ocean. A Japanese squadron appeared there on April 4. It was composed of at least three battleships—one of the Nagato class, the most powerful of the Japanese pre-war fleet—five aircraft carriers, a number of cruisers and several destroyer flotillas. On April 5 Japanese carrier-borne dive-bombers made a heavy attack on Colombo, possibly expecting to find the bulk of the British Eastern Fleet in the port and to repeat against it the success achieved against the American fleet at Pearl Harbour. It would appear, however, that not only were there no British men-of-war in the harbour, but also that the defences of Ceylon were fully prepared and very efficient. British fighters shot down 25 of the Japanese attackers and A.A. fire accounted for 2 more ; at least 5 more were reported " probably destroyed," and 25 more were damaged. How many of these got back to the Japanese carriers is not known. So effective had been the defence that the damage at Colombo was small and casualties few.

British forces were despatched to counter-attack, but they failed to locate the Japanese carriers so that no attack was made on them. Mr. Churchill in Parliament explained this by saying that the carriers were concealed by an isolated patch of bad weather so that they could not be observed from the air. United States carriers, according to published descriptions of their operations in the Pacific, have developed the technique of making use of local patches of bad weather for protection ; it would appear that the Japanese have learnt that trick too—evidence that they, like the Americans, have developed the use of the air weapon in naval operations to a high standard.

The same day the British cruisers Cornwall and Dorsetshire, which had left Colombo the day before, were located at sea by Japanese reconnaissance aircraft and were shortly afterwards attacked by a strong force of Japanese dive-bombers, presumably from the same carrier. They had no fighter

support and both ships were sunk. Fortunately there was not much loss of life and the greater part of both ships' companies were picked up by British destroyers the next day.

During the next two days Japanese cruisers, destroyers, and aircraft made widespread attacks on Allied shipping in all parts of the Bay of Bengal, and the coastal cities of Coconada and Vizagapatam in Madras were bombed from the air. Practically all the merchant shipping in the Bay of Bengal, some 20 ships, were sunk.

On April 9, Trincomalee, the naval base on the north-east coast of Ceylon, was bombed, damage being done to the air station and dockyard. Six Japanese aircraft were destroyed and six others were reported probably destroyed. Bombers were sent off to make a counter-attack on the Japanese carriers, which they did ; but they did not succeed in making any hits. H.M.S. *Hermes*, aircraft carrier, had left Trincomalee on April 8. On the morning of the attack she was located by a Japanese reconnaissance when some 80 miles to the south and 20 miles off the coast of Ceylon, in company with the Australian destroyer *Vampire*. Shortly afterwards she was attacked by some 70 Japanese aircraft all acting as dive-bombers, though some of them appeared to be actually reconnaissance machines. They came over in line ahead, diving in turn to release their bombs. Out of the first 50 about 40 either hit the ship or made near misses, and the *Hermes*, an old ship inadequately protected, sank in about ten minutes. The remaining enemy aircraft attacked and sank the *Vampire* in the same way. The Japanese squadron then appears to have withdrawn from the Indian Ocean, though seaborne supplies for their armies in Burma continued to be despatched thither through the Straits of Malacca.

It is of interest, though not of satisfaction, to compare the Japanese achievements with the British. In the attacks both on April 4 and on April 9 the Japanese located British men-of-war by air reconnaissance. They despatched striking forces to attack them, which promptly both located their objectives and achieved their destruction. On the other hand, on both these occasions the presence of Japanese forces was known and British striking forces were similarly despatched to attack them. On April 4 the British forces failed to locate the enemy and no attack was made ; on April 9 they located their objective and delivered their attack ; but that attack was completely ineffective. It is quite clear that the Japanese Navy had developed the art of the use of the air arm at sea to a much higher pitch than the British services. How far this is due to the fact that in the Japanese services all forces operating at sea, whether in the air or on the surface, are under a single control and belong to the same Service, whereas in the British organization they belong to separate Services, must remain a matter of opinion.

The approach to Australia by the Japanese from the north continued both east and west of New Guinea. On April 9 the Japanese seized the Admiralty Islands, to the north-east of the Bismark Archipelago. They consolidated their hold on the air stations at Lae and Salamaua whence they made occasional air raids on the Australian base at Port Moresby. The Allied air forces, however, continued to be built up in Australia, and they kept up a constant offensive against the Japanese at Rabaul and their more advanced bases.

In the Solomons it was reported on April 6 that beside establishing themselves at Buka, at the northern end of Bougainville, they had also established footholds at Kieta on the north-east coast, and Buin and Faisi

in the south. During the month it was observed by air reconnaissance that the Japanese were once more concentrating transports and supporting warships, chiefly at Rabaul, evidently with the intention of extending their occupations farther to the south-east.

The American strength was being built up all this time and counter-action began during the month. On April 18 occurred the American air attack on Tokyo and other cities in Japan itself, which is described elsewhere. On April 26 American troops established themselves in New Caledonia at the invitation of the Free French authorities in the Island, and later in the New Hebrides to the north of that island. This gave them positions in which to establish airfields whence the sea route from America to Australia could be given protection. American submarines continued to operate with effect in various parts of the Pacific and the Netherlands East Indies. On April 4 the Navy Department announced that one of them had sunk one Japanese light cruiser near Christmas Island, south of Java, and had made two torpedo hits on another light cruiser in the same vicinity, which was considered probably sunk. Japanese ships were attacked in the Carolines, in Japanese waters, and in the China Seas.

In the Philippines, although it was clear that American resistance could do no more than delay the final occupation by the Japanese, no opportunity of attack on the Japanese afloat was missed. On April 10 a United States submarine reported having sunk with three torpedoes a large Japanese armed merchant cruiser. On April 16 the Japanese made a fresh landing in the island of Panay. On April 21 the Navy Department announced that an American motor torpedo boat had made a successful attack on a Japanese cruiser near Cebu, and though driven off, had left it in a sinking condition. These gallant exploits, however, could not prevent the final Japanese occupation.

During the month, besides the losses already mentioned, those of the destroyers *Heythrop* and *Southwold*, of the submarine *Tempest* and of one armed trawler were announced.

MAY.

In the Atlantic, U-boat activity continued to be intense off the American coast. On May 12 Mr. MacDonald, the Canadian Minister for the Navy announced that a cargo steamer had been torpedoed and sunk in the River St. Lawrence, adding the next day that a second ship had been sunk at the same time. At the same time the Navy Department in Washington announced the sinking of an American merchant ship in the Gulf of Mexico. Two more ships were attacked there a few days later. On May 24 the American Press estimated the losses of Allied merchant ships in the western Atlantic to date at a total of 217 ships; full figures were not made known by the Navy Department, but at the end of May it was stated in the press, apparently on authority that was at least semi-official, that United Nations' ships were being sunk faster than they were being built.

On May 7 it was announced that a U-boat, caught on the surface at night while charging its batteries, had been sunk by an American destroyer and that a number of the crew had been taken prisoner and landed in the United States—the first prisoners from U-boats, so far as is known, to arrive there. Some time during the month the American destroyer *Blakeley* was hit by a torpedo from a U-boat in the Caribbean, but she

reached harbour successfully. On May 22 the Italian official Radio reported that an Italian submarine had sunk an American battleship of the Maryland class, 100 miles west of the island of Fernando Noronha. It was true that the Italian submarine Barbarigo had sunk a ship with two torpedoes in that position ; but the ship was the 5,000-ton British cargo ship Barrdale, not a battleship at all. The survivors were landed at Recife by an Argentine steamer a few days later. There was no more truth in an Italian claim issued on May 26 to have torpedoed and sunk an American cruiser of the Pensacola class in the same vicinity.

In home waters the beginning of the month was marked by the passage of a British convoy to North Russia and the loss of H.M.S. Edinburgh, cruiser, through damage suffered in the attacks made on it. There were actually two convoys involved, one of ships laden with war materials for Russia and the other of ships returning from Russia in ballast. The conditions were in favour of the enemy, for though Arctic ice had hardly begun to recede, so that the routes open to the convoy were severely restricted and it had to pass at no great distance from northern Norway, held by the enemy, yet there was already no darkness. Despite these handicaps, nearly all the outward-bound convoy reached Russia and only one ship was lost in the homeward-bound convoy.

Throughout four days the convoys and escort were subjected to continual attack by U-boats, by aircraft based in Norway and by German destroyers. An attack on the outward-bound convoy by three German destroyers on the afternoon of May 1 was beaten off without loss, as was one by six dive-bombers, one of which was shot down. The next day six torpedo aircraft attacked and three ships in the convoy were hit and sunk ; one aircraft was destroyed for certain and others were damaged. The third day, May 3, it was again the turn of dive-bombers, one of which was shot down ; only minor damage was suffered by one ship of the convoy which was not again attacked during its voyage. Ninety per cent of the supplies for Russia thus reached their destination. On April 30 the Edinburgh was hit by a U-boat's torpedo and her steering gear was disabled, but she was able still to steam slowly under her own power. On May 1 five separate attacks were made by German destroyers on the homeward-bound convoy but all were beaten off. It was in one of these that one ship of the convoy was sunk by torpedo and two others had a certain number of casualties. On May 2 the Edinburgh, by then in tow, and her escort were again attacked by three German destroyers ; one of them was sunk and another severely damaged before heavy weather and low visibility brought the action to an end. But the Edinburgh was hit by another torpedo and was so damaged that she had to be abandoned. The weather by then was so heavy as to make further towing impossible and she had to be sunk by our own ships.

Another similar convoy fought its way through at the end of the month, when conditions were even more unfavourable. It was under attack almost continuously for five days during which, it must be realised, there was no darkness, and the enemy used well over a hundred aircraft. The attacks began late on May 25. The chief burden of the defence lay on the anti-aircraft armaments of the escort and of the merchant ships in convoy themselves, but it was shared by at least one Hurricane carried on board, and catapulted from, a ship of the convoy. Since there was no carrier present and the attacks took place well out of reach of any airfield, the Hurricane so operated could make only one flight and had then to

alight in the sea. On that one flight Flying Officer Alastair Hay, R.A.F., the pilot, destroyed one Heinkel and damaged another before, himself wounded, he ran out of fuel and came down in the sea to be picked up by a ship of the escort. The German attacks by bombers, dive-bombers and torpedo aircraft continued until May 30 almost without intermission. The total bag was one Heinkel 111 and two Junkers 88 certainly destroyed, two more aircraft probably destroyed and two others damaged. The convoy's losses were stated by the Germans to have been eighteen ships sunk; after it arrived at its destination the Admiralty announced that that claim represented "an exaggeration of over 175 per cent", from which it may be inferred that the actual loss was about seven ships.

In the Channel a number of brushes between light craft took place. In the small hours of May 13, in rain and a rough sea, British light craft attacked a German convoy, sank a torpedo boat and torpedoed one of the ships in the convoy. On the night of May 14 two German armed trawlers were sunk by British motor-boats without loss. On May 17 the German cruiser Prinz Eugen was sighted by air reconnaissance steaming south along the Norwegian coast; she had evidently been temporarily repaired in Trondheim after being damaged by the Trident's torpedo, and was on her way to a German dockyard for more complete repairs. She was attacked by bombers and torpedo aircraft of the Coastal Command, supported by Beaufighters, and it was reported that she had been hit by torpedoes in a night attack off the southern tip of Norway; but later events seem to make it doubtful whether actually any hit was made, for she succeeded in reaching Germany. She was escorted on passage by four destroyers and by a large force of fighter aircraft, five of which were destroyed by British Beaufighters. The British force lost eleven aircraft.

The Coastal Command ably backed the light forces in their attacks on enemy coastal convoys, and a number of minesweepers, ships in convoy and convoy escorts were sunk or severely damaged by their bombs and torpedoes during the month. On May 30 the first 1,000-aircraft raid on Germany was made.

A number of German aircraft were shot down at sea by H.M. Ships. On May 9, H.M. Trawler Horatio shot down two Me.109's; on May 20 two M.L.s shot down another.

In the Mediterranean, air attacks on enemy ports were frequent whenever weather permitted. Rhodes and Leros in the Dodecanese were bombed on May 1; Benghazi on six nights during the month. The enemy's air attacks on Malta were continued with unabated ferocity, but his losses continued to be heavy. On May 11 it was announced that no fewer than 93 enemy aircraft had been shot down or damaged over the island during the weekend. On May 19 it was announced that already 100 had been destroyed during May. On May 16 the air attack was supplemented after dark by E-boats, of which two were destroyed by the coast defences.

The dangers of the sea passage to Africa from the operation of British submarines and air forces evidently induced the enemy to take to the air for troop transport. On May 12, British fighters off North Africa intercepted a number of Ju.52 troop-carriers and shot down 13 of them into the sea.

On May 11, a division of destroyers, H.M.S. Jervis, Jackal, Kipling and Lively, at sea between Crete and Libya, were attacked by German dive-bombers for four hours in what were afterwards described as "the

fiercest air attacks yet seen in the Mediterranean." At 4 p.m. the *Lively* steaming at full speed, was first hit ; she turned on her side and sank in four minutes, survivors being picked up by the *Jervis* and *Kipling*. The *Kipling* was hit two hours later, and floated for some time before sinking. The last attack of the day, just before dark, disabled the *Jackal*, starting a fire in her boiler-room. The *Jervis* took her in tow but when it became clear that she could not be saved took off her ships company and the survivors from the ships that she had on board and finally sank her with a torpedo. How the ships came to be where they were without air support was not explained.

On May 18 it was announced that Admiral Sir Andrew Cunningham was to relinquish the Mediterranean command, and would succeed Admiral Sir Charles Little as Head of the British Admiralty Delegation in Washington. He was relieved as Commander-in-Chief Mediterranean by Rear-Admiral Sir Henry Harwood, who was granted the acting rank of Admiral.

The chief event of the month in the Indian Ocean was the British landing in Madagascar, made in order to forestall the Japanese who were planning to treat it as they had treated Indo-China. It was important to deny the enemy the use of the French naval base at Diego Suarez at the extreme north of the island. Accordingly, on May 5 a British expedition under the command of Rear-Admiral Syfret landed at Courier Bay, on the west coast of the promontory on the east side of which Diego Suarez lies.

The navigational difficulties of the approach to Courier Bay are considerable and moreover it had been protected by a minefield ; for that reason perhaps the shore defences appear to have been but slight. The minefields were cleared by sweeping as the expedition approached, and *H.M.S. Auricula* was unfortunately lost in this operation ; but the force was landed successfully and took the fort, which protected Courier Bay, by surprise. The troops were landed rapidly and advanced from the south on the town of Antsirana, which lies on the harbour of Diego Suarez. They encountered substantial opposition but this they overcame in two days, being greatly assisted by the co-operation of a force of Royal Marines which took the defending French troops in the rear. They had been landed on the quay of Antsirana itself from a destroyer which had entered the harbour by night, running the gauntlet of minefields and shore defences, in order to land the Marines in the heart of the port's defences. For some reason, the name of the destroyer which achieved this very remarkable exploit has never been made public.

With the occupation of Antsirana organised opposition to the British forces in the northern part of Madagascar came to an end. The harbour of Diego Suarez and its naval dockyard were thus at the disposal of the Allies and secure against seizure by the Japanese. The British occupation was gradually extended, as the necessary forces became available on the spot, to include the whole of the island.

In the south-west Pacific organised resistance in the Philippines came to an end with the fall of Corregidor on May 6. Allied counter-attacks on the Japanese further to the south were continued whenever opportunity offered. On May 13 Allied bombers attacked shipping at Amboyna for the first time since the loss of the Dutch East Indies ; three ships in harbour were hit, one of them being sunk, and damage was done to the quays. A similar attack was made on Kupang, in Dutch Timor, on May 18. On May 22 it was announced that an Allied submarine had sunk an 8-inch Japanese cruiser of the *Kako* class together with a 6,000-ton auxiliary.

The chief events in this theatre were, however, the series of engagements afterwards known as the Battle of the Coral Sea.

No Allied naval force had been in the area, so far as is publicly known, since March 10, when American shipborne aircraft had taken part in the devastating attack on the Japanese armada at Lae. On May 4, however, a task force of the American Pacific Fleet, which included at least two aircraft carriers, located in the harbour of Tulagi, in the southern Solomons, a part of the Japanese invasion fleet which had been observed to be collecting during the previous weeks. Although the Japanese possessed facilities for complete air reconnaissance over the whole area, they did not appear to have observed the approach of Admiral Fletcher's squadron. Aircraft from his carriers attacked the Japanese at Tulagi at dawn and practically annihilated the whole force, for the loss of three American aircraft. One Japanese light cruiser, two destroyers, four gun-boats and one supply ship were sunk ; a 9,000-ton seaplane tender, a light cruiser, a cargo ship and a transport were badly damaged and driven ashore ; six Japanese aircraft were destroyed.

Three days later Admiral Fletcher located the main body of the Japanese fleet at anchor off Missima in the Louisiade Archipelago, and again achieved almost complete surprise with an air attack delivered just as the Japanese squadron was getting under way. The aircraft carrier *Ryukaku* was just about to turn into the wind in order to fly off her aircraft when she was hit by fifteen bombs from dive-bombers, and ten torpedoes ; she sank in a few minutes with nearly all her aircraft on board. A Japanese heavy cruiser was sunk at the same time.

She, however, was not the only aircraft carrier in the Japanese squadron and the aircraft from the other carrier, the *Shokaku*, delivered a counter-attack on Admiral Fletcher's squadron which, however, was successfully fought off without damage to American ships. Twenty-five Japanese aircraft were destroyed for a loss of six American. That afternoon Japanese aircraft sank by bombs the American tanker *Neosho*, and the destroyer *U.S. Sims* which was escorting her, in the Coral Sea. Casualties were not large in these two ships and all survivors were picked up shortly afterwards.

The following day, May 8, cross air attacks were renewed, being directed chiefly on the aircraft carriers on either side. The *Shokaku* was damaged severely by both bombs and torpedoes, and was blazing when last seen by American aircraft. The American carrier *Lexington*, flagship of Rear-Admiral Fitch, was also hit by two Japanese torpedoes and at least two bombs and was further damaged by a number of near misses so that fires were started in her too. They were extinguished, however, and her aircraft landed on again ; but several hours later, while she was steaming at twenty knots, a terrific internal explosion caused great damage and started serious fires in many parts of the ship. It was discovered that this was the result of petrol leaks from pipes damaged in the earlier attacks. It proved impossible to get the fires under control and the *Lexington* had to be abandoned ; shortly afterwards she sank, but ninety-two per cent of her company were saved.

The *Lexington*, *Neosho* and *Sims* were the only American warships lost in the two actions, the air attacks on Salamaua and Lae in March and the Coral Sea Battle in May. Japanese losses on the other hand, however, amounted to one aircraft carrier, three heavy cruisers, one light cruiser, two destroyers, several transports and small vessels sunk, as well as a

second aircraft carrier and another destroyer so severely damaged as to be rated probably sunk ; one carrier, three cruisers, two aircraft tenders, three destroyers and some twelve auxiliaries severely damaged ; more than a hundred aircraft destroyed.

On May 31 Japanese midget submarines made attacks on two Allied harbours which they succeeded in entering ; one of these was Sydney and the other Diego Suarez. At Sydney four submarines penetrated the defences but were all detected almost immediately and sunk, at least one of them being afterwards raised almost intact. Their only success was to torpedo and sink a depot ship, in which nineteen naval ratings were killed and ten injured. The boats appear to have been similar to those used at Pearl Harbour which were described in last year's " Brassey ". Few details of the Diego Suarez attack were allowed to become public, but it was believed that two submarines penetrated the harbour. The Japanese claimed to have damaged a battleship of the Queen Elizabeth class and a cruiser of the Arethusa class ; these claims were denied by the Admiralty. Two days later two Japanese naval officers, who had obviously landed from one of the submarines, were found in a village on the shore of the harbour. When challenged by a British patrol which summoned them to surrender they opened fire and in consequence were shot.

In addition to the loss of H.M. ships already chronicled, those of the destroyer Jaguar and the corvette Hollyhock were both announced during the month.

JUNE.

Early in June it was announced in America that there was some improvement in shipping losses in the western Atlantic but they still remained at a dangerously high figure, particularly in tankers. Towards the end of the month the Navy Department announced that 13 ships had been sunk in the Caribbean in the twelve days beginning June 3. A rumour was current at the same time that, besides U-boats, a large German surface raider was operating in the Caribbean ; but the story rested on nothing more than the reports from survivors of a Panamanian merchant ship and it was not confirmed. On June 22 the Navy Department announced that the convoy system had been in operation off the American coast for a month, and on June 28 that the United States Navy had undertaken to patrol the South Atlantic, using Montevideo as a base. A number of merchant ships belonging to Central and South American powers, Mexican, Brazilian and Argentine, were sunk by U-boats during the month, and considerable indignation was caused thereby in those countries.

It was suspected that U-boats were receiving clandestine assistance at various places in the Americas. On June 22 fifteen persons were arrested in British Honduras as enemy agents, and on June 24 it was reported that a U-boat base had been discovered at the mouth of the Gurupi river in Brazil.

In Home Waters there were a number of actions between light forces in the Channel and southern North Sea, while the Air Force kept up a sporadic offensive against German naval bases. Ostend was bombed on June 5, Emden on June 20 and 22, St. Nazaire on June 17 and June 24, while on June 25 a raid by a thousand aircraft was made on Bremen. On June 4 a small combined operation in the area between Boulogne and Le Touquet was carried out. It was described by the official communiqué as " a minor reconnaissance raid " by Commandos, transported by the

Navy and covered by the operations of the Air Force. The landing was made at night, the landing party, practically all of whom returned, obtained valuable information and while they were ashore the naval forces engaged and sank an enemy patrol vessel without loss or damage to themselves. The German defences were thrown into complete confusion and fired at each other.

On June 8 in an action between British motor torpedo boats and German 600-ton torpedo boats off the Belgian coast, one of the Germans was sunk. The big guns mounted at Dover were in action the same night, though whether the two incidents had any connection was not revealed. On June 21 a force of light craft, one of which belonged to the Polish navy, was searching in the Channel for a flotilla of E-boats. The Polish ship had been detached for reconnaissance, yet just as he received a message from the Senior Officer recalling him, the Polish Captain sighted six E-boats. Following a distinguished precedent, he failed to understand the signal of recall and steered straight for the enemy, engaging them with all his guns. The enemy, apparently taken by surprise, turned away and retired, abandoning whatever purpose he had in mind. Despite the enemy's superiority of force the Polish ship was hit only once.

Small craft had a number of successes against German aircraft during the month. On June 2 one of them was shot down by H.M. Trawler Cayrian. On June 10 one Junkers 88 was shot down by the combined fire of a Channel convoy and its escort, while another was so badly damaged that it was considered impossible for it to have got home. On June 15 a Junkers 88 was shot down by H.M.S. Atherstone, and others attempting to attack the convoy in the western Channel were driven off. On June 9 a German mine sweeper was sunk by British fighter aircraft, an exploit which was repeated on June 19, when three enemy mine sweepers were severely damaged by a patrol of Spitfires which at the same time destroyed four enemy fighters.

On June 17 H.M.S. Wild Swan was at sea a hundred miles west of Brittany when she was attacked by a force of twelve German bombers which also attacked a Spanish trawler fleet fishing in the vicinity, sinking three of them and damaging another. The Wild Swan shot down four of the twelve Junkers 88 and two others, probably damaged by her fire, collided with one another and crashed into the sea. The remaining six retired, having had enough, but in the meanwhile the Wild Swan, damaged by a bomb, unfortunately collided with the Spanish trawler which had also been damaged by the enemy. The trawler sank but eleven of her crew, including the skipper, were picked up by the Wild Swan. It is regrettable to have to relate that she herself sank later from the damage she had suffered, but her company and the Spaniards she had rescued were picked up by another British destroyer which went to her assistance.

On June 11, it was announced that a task-force of the United States Fleet had been for the last four months acting in conjunction with the Home Fleet, under the orders of Admiral Sir John Tovey. Its composition was not disclosed but it contained at least one battleship and it was commanded by Rear-Admiral Giffen.

The submarines of the Mediterranean Fleet kept up their offensive against the Axis sea-borne communications. On June 1, it was announced that 12,000-tons of enemy shipping had been sunk by them and that two more supply ships had been damaged. On June 9 a description was issued of the destruction by H.M. Submarine Turbulent of five merchant

ships and a destroyer of the "Navigatori" class which was escorting some of them. On June 25, the destruction of two more supply ships by H.M. submarines was announced. These attacks were reinforced from the air, and an Italian ship, believed to have been full of troops, was repeatedly torpedoed from the air on June 3 and finally sank on June 4. For most of the month the R.A.F. were so fully occupied with co-operation with the Army—it was the period of the loss of Tobruk and the British withdrawal to El Alamein—that they presumably had not much force to spare for use at sea. But on June 23, two supply ships, escorted by destroyers, were reported hit by torpedoes from aircraft in the central Mediterranean; the same results were reported from the next day's operations. And at the same time, two ships were reported hit by bombs off Palermo.

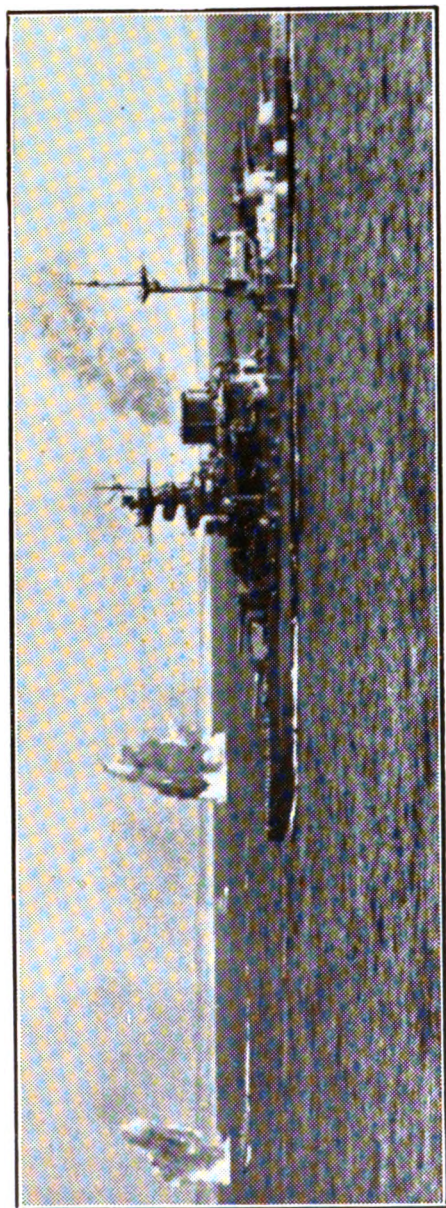
On June 10 the award was announced of the V.C. to two men in H.M. Submarine Thrasher, for service which had actually been performed in the Mediterranean in the preceding February. The Thrasher, after sinking an enemy supply ship, was attacked by her escort and from the air. She eluded the attack but when she surfaced, some hours afterwards, two unexploded bombs were discovered to be rolling about inside the casing as the ship rolled in the surface swell. Lieutenant P. R. W. Roberts and Petty-Officer T. W. Gould volunteered to remove the bombs. To reach them they had to crawl, lying down at full length, through the space between the casing and the hull for a distance of some 20 feet and to drag the bomb back with them the way they had come before they could lower it overboard. The *London Gazette* announcing the reward continued the description of their exploit in the following words: "Every time the bomb was moved there was a loud twanging noise as of a broken spring, which added nothing to their peace of mind. This deed was the more gallant as H.M.S. Thrasher's presence was known to the enemy; she was close to the enemy coast in waters where his patrols were known to be active day and night. There was a very great chance, and they knew it, that the submarine might have to crash-dive while they were in the casing. Had this happened they must have been drowned."

The chief events of the month in the Mediterranean, however, were connected with the despatch of two convoys for Malta, one from Gibraltar and one from Alexandria, in the middle of the month. The Gibraltar convoy, which was under the command of Vice-Admiral Curteis, was located from the air before it reached the longitude of Sardinia, and was under continual air attack from that time on. Forty-three Axis aircraft were destroyed for certain and 22 probably destroyed as well as many others damaged. A.A. gunfire from the convoy and its naval escort, naval aircraft and R.A.F. all had a hand in this result. Two enemy cruisers and four destroyers at one time seemed to be about to attack it, but abandoned the intention when attacked by British aircraft, which hit one destroyer with two torpedoes and a bomb, and also reported other hits. The convoy suffered serious losses, but reached Malta early on June 16.

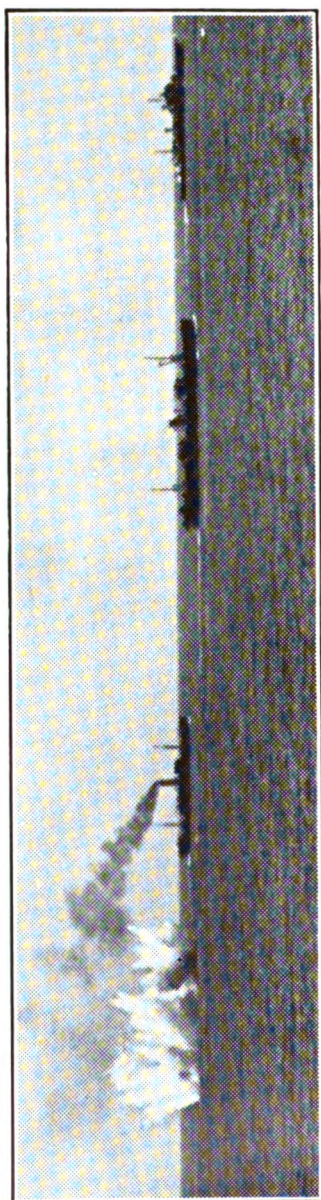
The eastern convoy, under the command of Rear-Admiral Vian, first sent some ships into Tobruk—which fell to the enemy's land attack less than a week later—and then carried on for Malta. Air reconnaissance located an Italian fleet consisting of two Littorio class battleships, four cruisers and eight or nine destroyers steering so as to intercept it. Admiral Vian was thus compelled to take avoiding action, while British aircraft from Malta and Libya—the latter reinforced by a squadron of American



A convoy in the Arctic Sea.
(Official Photograph. Crown copyright reserved.)



A British battleship in the Mediterranean.



A Malta convoy.

Army bombers—went to the attack on June 15. One of the attacks was watched by a British submarine, which, seeing a “Trento” class 10,000-ton cruiser set on fire and disabled by a torpedo from our aircraft, closed in and sank her with another torpedo. One of the Italian battleships was also hit by a torpedo, but whether from air or from the submarine the official account—which was given by Mr. Attlee in Parliament—for some reason did not make clear. The bomb and torpedo air attacks on the Italian squadron were intended to be simultaneous, but it appeared from an interview given to an American press correspondent by Major Kalberer, who commanded the Army bombers, after his return to his African airfield, that in fact synchronisation was not achieved. Major Kalberer’s account of the result of his squadron’s bombing, possibly embroidered by the pressman to whom it was given, afterwards appeared, in the light of the known results, to have erred on the side of optimism.

After the air and submarine attacks, the Italian squadron returned to its base; but by that time the eastern convoy, which had lost one ship by Axis air attack, had expended so much fuel in “avoiding action”, that it could not continue its voyage, and it returned to Malta.

The naval losses were as follows. British—H.M.S. *Hermione*, cruiser, and the four destroyers *Bedouin*, *Hasty*, *Grove* and *Airedale*, together with the *Nestor*, of the Royal Australian Navy and the *Kujawiak* of the Polish Navy. Italian—one “Trento” class cruiser, two destroyers and one submarine, besides one of their battleships torpedoed. The enemy lost 65 aircraft at least, against a British loss of 30, all told, naval or Air Force. Malta had been replenished once more, but only at heavy cost.

In the Indian Ocean the Yugoslav S.S. *Supetar*, 3,750-tons, was torpedoed by an unknown submarine in the Mozambique Channel on June 17. No other activity was reported from this station, but stirring events happened in the Pacific. The Japanese attacks in the Aleutian Islands began; the Japanese Fleet was decisively defeated in the Midway Battle; and the Japanese infiltration in the New Guinea—Solomon Islands area continued steadily.

On June 3, four Japanese carrier-borne bombers, escorted by fighters, attacked the U.S. naval station at Dutch Harbour, Unalaska, in order to distract attention from the Japanese landing which was made the same day on Attu, the westernmost of the Aleutian Islands. For the latter, they employed some five transports, guarded by cruisers and destroyers with two small aircraft carriers and two seaplane tenders. Dutch Harbour was attacked again the next day, as were Fort Mears and Port Glenn, near by. Casualties were few and material damage negligible.

Weather precluded any American air reconnaissance for a week—the Aleutians are more frequently fog-bound than anywhere else on earth. It was not until June 11 that the Americans could observe that the Japanese had occupied Attu, when counter-attacks were at once begun. Washington announced on June 15 that a Japanese cruiser transport had been sunk, three other cruisers, an aircraft carrier, a destroyer and a gunboat damaged there. On June 18 it was further observed that the Japanese had occupied Kiska, which possesses a good harbour. American bombers at once attacked, sank a Japanese transport in the harbour and damaged a cruiser. But the weather permitted attacks on no more than three further days during the month.

It seems clear that these Japanese attacks in the north, besides being

designed to prevent the Americans using the Aleutians as bases for the attack on Japanese territory—to which they are the nearest American possessions—were also intended to divert American attention from the main attack, which was at the same time in the process of being launched against Midway Island. Midway is the westernmost of the chain of islands of which Hawaii is the most important, and any attempt at further attacks on the great American base of Pearl Harbour must necessarily be preceded by the seizure of Midway, where there was a strong American garrison of troops and air forces. On the evening of June 3 American air patrols located a large Japanese force of transports, cargo ships, many escort craft and also cruisers, in a position 700 miles west of Midway, steering east. Army bombers from Midway attacked that night and reported hitting a cruiser and a transport severely, besides doing lesser damage to other ships. The naval flying boats later attacked with torpedoes by moonlight and hit two large ships one of which was believed to have sunk.

From dawn next day American air attacks were constant, although their air losses were serious. Four Army torpedo aircraft, of which only two returned, attacked two Japanese carriers and reported one probably hit. Six Marine Corps torpedo aircraft, of which only one returned, were also believed to have hit one Japanese ship. Sixteen Marine Corps dive-bombers, of which only eight returned, made three hits on a carrier, believed to have been the *Soryu*. Eleven Marine Corps dive-bombers attacked a battleship, making two hits; sixteen Army high-level bombers reported three hits on Japanese carriers one of which was set on fire. By the early afternoon only ten out of eighty ships in the Japanese armada had been hit, but the effect of the American attacks was evidently so serious as to determine the Japanese Commander to abandon his enterprise. The Japanese force which included his aircraft carriers altered course to the north-westward and appeared to be withdrawing.

Early that morning, before the first American attacks, Japanese bombers had left their carriers to attack Midway. They greatly outnumbered the Marine Corps fighters of the garrison, but some forty of them were shot down and more were damaged. The airfield installation at Midway was damaged severely but was not put out of action, and no American plane was caught on the ground.

During this time American carriers, which were already at sea, were moving so as to bring their air forces into action, but the Japanese alteration of course was unknown to them at the time their aircraft took off. The American method is to deliver synchronised attacks by torpedo aircraft and dive-bombers, with the object of so fully occupying the defence that it shall not be fully effective against either attack. On this occasion, however, when the enemy was not found in the expected position, synchronisation could not be achieved. The aircraft had flown off at the earliest moment that their endurance would enable them to get in an attack, and when they did not find the enemy where they expected they had no fuel to spare for the extra distance that search would entail. Some of them, unable to reach their ships, returned to Midway. But one flight of fifteen torpedo planes was taken on to attack the enemy by its Commanding Officer, who had correctly divined what had taken place. They made their attack, from which none of them returned, since there was no simultaneous dive-bomber attack to distract the attention of the Japanese fighters, against which the ship-borne torpedo planes had little chance. The only survivor of that gallant flight was one Ensign, who had hit a

Japanese carrier with his torpedo before his plane was shot down. But the attack was of the greatest value since it located the Japanese force, whose movements thenceforward were known to the Americans.

More ship-borne forces then attacked and though their losses were heavy the Japanese carriers, Kaga, Akagi and Soryu were so severely damaged that they sank during the night, leaving the Japanese only the carrier Hiryu, so far undamaged in action. Thirty-six of her aircraft then attacked the American carrier Yorktown and her escort. Eleven out of eighteen Japanese bombers were shot down by American fighters during their approach. Three more were destroyed by anti-aircraft fire, but the remaining four made three hits with bombs on the Yorktown, and got away. The other half of the Japanese force were torpedo planes; all except five of them were destroyed before launching their torpedoes, and the remainder after doing so. Some of their torpedoes also hit the Yorktown and the damage she received made it impossible for her to operate her aircraft which, however, continued to work from other carriers of the American Fleet; in the meanwhile, they had located the Hiryu. The Japanese carrier was at once attacked, crippled and set on fire, so that she sank the next morning. The Yorktown was taken in tow and in spite of severe damage, which made it necessary to remove her company, the prospects of getting her into harbour seemed good. Two days later, however, she was attacked by a Japanese submarine and hit by another torpedo so that she sank shortly afterwards. The American destroyer Hammann was also hit by torpedoes and sunk but the casualties from both ships were few. The Yorktown and Hammann were the only American ships lost in the whole battle.

Very much the same thing was happening in the Japanese Fleet. The Soryu, disabled, was being taken in tow by Japanese ships when she was hit by torpedoes from an American submarine. She sank later.

On June 5 all Japanese forces, separated into several groups, were in full retreat, assisted by bad flying weather which made air search for them difficult. But the American attacks nevertheless were continued. Army bombers reported attacking a force of battleships and cruisers and disabling two cruisers, both of which were again hit later in the day. The American ship-borne planes were unable to locate any Japanese forces that day, but by steaming fast to the westward they succeeded in finding a cruiser force the day afterwards, June 6. They then attacked a squadron consisting of the Japanese cruisers Mikuma and Mogami and three destroyers. Both cruisers and one destroyer were sunk and at least one other destroyer damaged. That was the end of the battle and the surviving Japanese ships got away and were not again located.

The full Japanese losses were assessed as follows; all four aircraft carriers sunk; three battleships damaged, one severely by bombs and torpedoes; two heavy cruisers sunk, three others damaged, one or two severely; one light cruiser damaged; three destroyers sunk, several others damaged; at least three transports or auxiliaries damaged, one or two of them being sunk. 275 Japanese aircraft destroyed or lost at sea for lack of a flight deck on which to alight. Approximately 4,800 Japanese officers and men killed or drowned. American casualties were 92 officers and 215 men killed or missing.

The battle was a decisive defeat for the Japanese, but it is noteworthy that there were no ship-to-ship actions in it. Indeed it would appear that, as in the Battle of the Coral Sea, the opposing Fleets were never within

100 miles of one another. Yet the Japanese losses, except in carriers, were by no means crippling and it was doubtless a great disappointment to Admiral Nimitz, Commander-in-Chief of the Pacific Fleet, that the unfavourable weather after the elimination of the Japanese carriers prevented him completing the business decisively by gaining contact with his surface ships—as he was able to do on a later occasion, to be described in its proper place.

On June 29 Army bombers made a concentrated attack on the Japanese garrison in Wake Island, 2,000 miles west of Hawaii. The Japanese airfield there was severely damaged and all the American aircraft returned safely.

In the south-west Pacific there were few incidents at sea, though the Japanese appeared to be preparing the way by air attacks for extending their occupations of the islands to the north and north-east of Australia. The Japanese bombed Darwin on many occasions, using Timor and the Moluccas as bases. They also bombed Port Moresby frequently from New Britain and from Lae and Salamaua. The Allied forces from Australia continued air attacks at frequent intervals on Rabaul and on Lae and Salamaua and on June 28 they bombed Japanese forces in Tulagi harbour.

British losses announced during the month besides those already recorded included the *Trinidad*, cruiser, announced on June 2, the submarine *Olympus*, a trawler and a mine sweeper.

JULY.

Shipping losses during the month continued to be heavy, and the United States War Shipping Administration let it be known on July 21 that the losses during the week beginning July 12 were the highest since the beginning of the War and that they greatly exceeded new construction. The Germans vaunted these successes by radio, announcing that one U-boat had penetrated into the St. Lawrence River and had destroyed a number of ships in convoy there. The German newspaper *Militär Wochenblatt* of Berlin, taking figures no doubt supplied by Dr. Goebbels, stated that sinkings in May had reached the total of 924,000-tons and in June 886,000. These figures were, of course, grossly exaggerated; but though unpublished the real figures were, as made known in America, serious enough. The German newspaper contained one accurate statement, however, that the greater part of the sinkings had been in the western Atlantic. Washington announced on July 3 that British destroyers and corvettes were collaborating with American escort ships in the escort of convoys in American waters; and in the middle of July, when the convoy system had been extended to the Caribbean, that measure produced an almost immediate improvement in the losses in that area. On July 17 Washington let it be known that the sinkings there had diminished. On July 2 a U-boat entered the harbour of Puerto Limon in Costa Rica and torpedoed and sank an American merchant ship which was unloading alongside the pier.

Early in the month another convoy was sent through to North Russian ports carrying war materials, and as before, it was subjected to heavy attacks for several days on end. No British version of what happened was issued, and the German claims are therefore the only guide to what happened—except a laconic Russian announcement on July 7 that the convoy had arrived in Russian ports, which omitted to mention the subject of losses

at all. On July 7 the Germans stated that their attacks on the convoy had started on July 2, when it was between the North Cape and Spitsbergen, over 800 miles from Norway; that it had originally consisted of 38 ships escorted by destroyers and corvettes, together with a covering force of larger warships; that German bombs or aircraft torpedoes had sunk an American cruiser and 19 merchant ships, while U-boats had sunk nine more merchant ships, the total tonnage loss being 192,000-tons. The next day German claims were increased to 32 ships in all.

On July 8 the presence of the convoy in the Barents Sea was sufficiently tempting to induce the German battleship *Tirpitz*, with the pocket battleships *Admiral Scheer* and *Lutzow* and the big cruiser *Hipper* to put to sea to attack it. That action alone is sufficient to cast doubt on the German figures, since if all except six ships of the convoy were already sunk, it would be using a steam-hammer to crack a nut to send such a force to deal with the remainder. In the event, however, their attack never came off; for the *Tirpitz* was attacked by a Russian submarine and promptly returned with her consorts to her Norwegian base. The Captain of the Russian submarine reported that two of his torpedoes had hit the *Tirpitz*; but the fact that she was able to return to harbour, and moreover remained for months afterwards in Norwegian waters without returning to Germany for repair, indicates that his report was perhaps over-optimistic.

In the air offensive against German ports the naval bases *Wilhelmshaven* was attacked on July 8, *Danzig* on July 11, *Ostend* on July 14, *Lubeck* on July 16, *Vege-sack*—below *Bremen*—on July 19, *Hamburg* on July 26 and 28.

Eight encounters between light forces occurred. On July 9, two motor gunboats attacked six German minesweepers, sank two of them and damaged three others without casualties to themselves. On July 16 a British patrol commanded by Lieutenant Commander R. P. Hichens, R.N.V.R., attacked a fully-loaded German tanker, protected by two armed trawlers and three E-boats, set the tanker on fire and sank her and severely damaged the enemy trawlers. On July 20 a British patrol attacked a superior enemy force of trawlers and flak ships which was covering the northward passage of a supply ship close inshore of *Cape Gris Nez*. In a confused action several enemy ships were damaged, one trawler set on fire and the whole party turned back to harbour in *Boulogne*. One motor gunboat was lost. On July 27 a British patrol sank one enemy flak trawler, and damaged another off the French coast. On July 28, exactly the same result was achieved off *Cherbourg*. The next day, a British patrol off the Dutch coast sank an enemy supply ship after a brisk action with its escort in which an E-boat and an armed trawler were set on fire. On July 30 there were three encounters off the Dutch coast and in the Channel in which at least two enemy ships were set on fire. One British boat was disabled, but was towed home.

On July 15 light craft of the Navy and R.A.F. on sea-air rescue service were attacked by enemy fighters, one of them being sunk and others damaged with casualties. Gunfire from the launches, however, brought down one enemy plane and damaged another, while two more were shot down by British, Polish and Canadian fighters. On July 17 a F.W.190 fighter out of four attacking a British merchant ship in the Channel was shot down by the two motor launches escorting her.

The Coastal Command of the R.A.F. intensified its operation against U-boats during the month, extending them to the Bay of Biscay. In the endeavour to counter-attack these, the enemy sent out strong fighter forces

which fought a battle with the Coastal Command aircraft on July 28. No British plane was lost, but one Me. was shot down, three Arados were damaged and three others abandoned the attack. The British force included Sunderlands, Wellingtons and Whitleys.

In the Baltic, two Swedish ships were attacked by unidentified submarines on July 6 and 12, the second one being hit by a torpedo. The enemy alleged that the submarines were Russian.

In the Mediterranean, Axis attacks on Malta were intensified, evidently with the object of denying its use as a base to our light forces, so that Axis supplies to Africa might be facilitated. But the *Luftwaffe* and *Regia Aeronautica* paid a heavy price. By July 7, the month's total of enemy aircraft destroyed by the Island's defenders was 59, increased to 98 by July 13; and that rate was well maintained for the rest of the month.

On July 10, an Admiralty announcement described how a British submarine sank a south-bound enemy supply ship in the central Mediterranean, which was strongly escorted, and later sank a naval auxiliary. The enemy made increasing use of air transport from Crete to Libya for the troops sent to reinforce Rommel; but his heavy supplies, of course, could only be carried by sea. On July 23, more execution by British submarines was announced in Cairo, four more supply ships on the Libya run having been sunk. Large enemy supply ships were sunk by air attack in the Ionian Sea on July 24 and 30.

On July 7 the award of the V.C. to Commander A. C. C. Miers was announced for taking H.M.S. Torbay right into Corfu harbour, and attacking the enemy in full daylight in a glassy calm.

On July 14, the Berlin Radio announced that the new Italian battle-ships *Roma* and *Impero*, sister ships of the *Littorio*, were now in commission. It is improbable that this was true, though one of them might well have been completed by then.

As Rommel's army advanced into Egypt, he was obliged to make increasing use of sea transport along the coast, and the port of Matruh became of increasing value to him. It was accordingly bombarded from the sea by British forces on the nights of July 17, 20 and 23. An ammunition ship was destroyed outside the harbour in one of these attacks, and a patrol ship inside it on another. On July 20, the attack was carried on by day by Beaufighters, which sank a number of barges off Sidi Barrani. In the operations designed to hamper Rommel's communications, bombing of Tobruk and Suda Bay on July 21 and 25 had an important part.

In the Pacific, American counter-action against the Japanese in the Aleutian Islands increased in intensity. On July 4 American submarines attacked Japanese destroyers in Kiska harbour, sinking three of them and hitting a fourth with a torpedo; another Japanese destroyer was sunk off Agattu the same day. Four days later yet another destroyer was torpedoed and sunk near Kiska, as were three more in the next ten days. But despite these losses, the Japanese were firmly, if uncomfortably, established in Kiska, where they had the use of its good harbour, and where they were employed in constructing airfields. By their own accounts—given in a Tokyo broadcast—they found life there miserable in the extreme.

On July 25, the Navy Department announced that an American submarine had sunk a Japanese destroyer—a photograph of this ship sinking, taken through the submarine's periscope, was published—a tanker, and three or four cargo ships in Japanese waters.

In the islands north of Australia the situation was not greatly altered during the month until July 21, when a Japanese convoy was sighted approaching Gona, in Papua. It was repeatedly attacked from the air both during its approach and while the Japanese were landing at Gona : one transport and one landing barge were sunk and heavy casualties were inflicted on the Japanese while landing. Other ships were hit in the next few days, and one laden with oil was set on fire and on July 29 a Japanese destroyer was hit by a bomb so that she had to be beached. It was a case of a sea-borne invasion opposed only by air, which in the circumstances proved unable to prevent the enemy establishing himself ashore.

One whaler and one trawler were lost during the month.

AUGUST

On August 7 a Government spokesman in Washington told the Press that there had been a "very definite decline" in the number of merchant ships sunk off the American coast in the last two weeks. At the same time he warned his audience that this lull might merely indicate that the Germans were preparing an attack elsewhere, possibly on the supply line to Russia. One of the pointers in this direction was that an apparently wanton attack on a lighthouse in Iceland had been reported on August 5. Whether the improvement was continued or not was not made public by any Allied authority, but on August 11 the enemy issued a special announcement claiming to have sunk a large number of Allied merchant ships in convoy in the last few days. It also announced that German operations had been extended to the South American and West African coasts. A similar special announcement was made from Berlin on August 31.

The extension to the South Atlantic was confirmed from Washington on August 19 when the Navy Department announced that the survivors had arrived in an American port of an American merchant ship recently sunk there by an enemy raider. The raider was described as a ship of 8,000 to 9,000 tons mounting at least six guns, some of which were 8 in., carrying motor-boats armed with machine guns, and having a speed of about 20 knots. Additional confirmation was provided by the sinking of a number of Brazilian ships by U-boats during the month, including one transport, with a loss of over 700 Brazilian troops. The Brazilian Navy immediately started counteraction against U-boats, and on August 22 Brazil declared war against the Axis. Towards the end of the month it was announced in the German newspapers that the repair and re-equipment of U-boats had been transferred almost entirely to the Atlantic coast. The *National Zeitung* stated that full preparations for this had been made long in advance, so that work could start as soon as the ports fell into German hands.

On August 28 the Navy Department announced that aircraft of the British Coastal Command were operating in company with American air forces in the western Atlantic, and had already been in action against U-boats there. This collaboration was doubtless of great value, in that it placed British experience at the disposal of American forces.

In Home Waters a number of actions took place between light forces. On August 1 a British patrol under the command of Lieutenant-Commander Hitchens, R.N.V.R., was making a sweep close to Cherbourg when it encountered four E-boats and at once engaged them. Two of them were set on fire and the other two were damaged when two 600-ton German

torpedo boats came on the scene. These were engaged in their turn, and Mr. Hichens then disengaged and lay off to watch an action which developed between the torpedo boats and the E-boats, helped by the German shore batteries which fired impartially on both. The British patrol returned to harbour undamaged with only two slight casualties. On August 16 a British patrol in the Dover Straits engaged six enemy minesweepers and sank one of them, picking up 15 prisoners. Another was rammed by one British boat and so severely damaged that she was considered likely to have sunk, while two others were damaged by gunfire. On August 24 a British patrol was off Flushing when the Commanding Officer, Lieutenant Lloyd, R.N., sighted four enemy flak ships at a distance of some four miles when nobody else in his ship could see them. He closed in and attacked, his motor gunboats making six runs up and down the line of enemy ships, and hit them many times with only trivial damage to one of his own boats. The motor torpedo-boats then attacked and sank two of the enemy. One of the M.T.B.'s was disabled for a time but all the British boats returned to harbour without casualties.

The often described Dieppe raid, a combined operation of all three forces, took place on August 19. The force arrived off the points selected for the landing at 4.50 a.m., and the troops were landed at all beaches at the time designed in the plan, with one exception. One section of the force, on its way in, by chance encountered a German coastal convoy and an action ensued in which two German armed trawlers were destroyed while that section of the British landing force was twenty minutes behind schedule in getting ashore. The new tank landing craft were used; in earnest for the first time. Very complete air cover was given by the R.A.F., with the result that the warships and auxiliaries were able to lie off the beach with comparative immunity from enemy air attack. They were subject, however, to fire from enemy guns on shore, some of which, though not all, had been silenced by the British commandos. H.M.S. Berkeley, a Hunt class destroyer, was so severely damaged by enemy gunfire that she could not have got back to harbour and had to be sunk by our own forces; fortunately the majority of her ship's company were saved. A fairly large number of landing craft, however, were lost partly, it is to be supposed, sunk while afloat and partly because they could not be got off from the shore after landing the forces they carried. The naval force did not leave the vicinity of Dieppe until it was quite clear that no more of the landing party could be brought away. The raid cannot be counted as successful, except in so far as it provided experience of opposed landings using modern equipment which could not have been obtained in any other way.

In the Mediterranean, another convoy was taken through to Malta during the month. It passed into the Mediterranean on the night of August 9—10 escorted by a powerful squadron under Vice-Admiral Syfret, with his flag in the Nelson. It comprised at least four aircraft carriers commanded by Rear-Admiral Lyster, until recently 5th Sea Lord of the Admiralty, and a force of cruisers and destroyers under the command of Rear-Admiral Burrough. The enemy attacked the convoy with nearly all the forces at his disposal, U-boats in packs, high-level bombers, Stukas and torpedo aircraft as soon as it came within range from the Sardinian airfields; and, in the Sicilian narrows, with E-boats. The only force which did not take part in the operations against the convoy was the Italian Fleet.

The action began on August 11 when the *Eagle*, wing ship of the carrier squadron, was hit by several torpedoes from a U-boat and sank very shortly afterwards, fortunately with but small loss of life. Some of her aircraft at the time were in the air and they went to other carriers of the squadron ; but a good many of them went down with the ship as it was impossible to fly them off after she was hit owing to the list she at once took up. A U-boat was rammed and sunk shortly afterwards by the destroyer *Wolverine*. It was believed that it was the U-boat which had sunk the *Eagle*, but that seems to be uncertain, for there were undoubtedly many of them present. A number of other U-boats attacks were made in the course of the day, but no other ship was hit ; a second U-boat was sunk by the destroyers *Pathfinder* and *Ithuriel*. An attack by dive-bombers and torpedo aircraft was made just before dark on August 11. No damage was sustained and a number of enemy aircraft were destroyed.

On August 12 attacks were continuous from dawn to dusk. H.M.S. *Cairo* was hit by a torpedo from a U-boat which disabled her rudders and propellers. It was impracticable to tow her in view of the incessant air attacks which were being made, and it was therefore necessary to sink her with a British torpedo after dark that night. The convoy suffered some losses during the day, but 39 enemy aircraft were destroyed for certain, and 5 more probables. By the evening the convoy was close to the narrows and as it was not then possible for the Italian Fleet to attack it before it reached Malta, Admiral Syfret's heavy ships turned back leaving the light ships under Admiral Burrough to take it on to Malta. Admiral Burrough's own flagship had been hit by a U-boat's torpedo, but she returned safely to harbour, while the Admiral shifted his flag to the destroyer *Ashanti* for the last part of his voyage. During the night the cruiser *Manchester* was hit either by a torpedo or a mine and later sank, though most of her company reached the Tunisian shore, to be taken prisoner by the French. The destroyer *Foresight* was hit during the day by a torpedo from an aircraft and was disabled. She was towed for over 12 hours but it proved eventually impossible to save her, and she too had to be abandoned and sunk.

In its passage through the narrows the convoy was attacked heavily and continuously by E-boats, two of which for certain were sunk and probably others, and it suffered some more losses. With daylight air attacks were renewed, but it had then reached the area covered by Malta's Beaufighters and, not long afterwards, came within range of Malta's Spitfires. They took over its defence while Admiral Burrough's ships turned back to rejoin the main body of Admiral Syfret's squadron. They were under continuous attack as long as they were within range of Sardinian airfields, but no further damage was received.

Much needed supplies and replenishments had thus reached Malta, but only at very heavy cost. The convoy's own losses were not made public, naturally enough, but they may have been as high as 50 per cent. The escort had lost an aircraft carrier, two cruisers and a destroyer, and other ships had been damaged more or less severely and would thus presumably be out of action for a longer or shorter period. Nothing could be more admirable than the service rendered on this occasion by the merchant ships of the convoy which was duly recognised by the award of decorations not long afterwards. But the prospect of having to incur losses on this scale every time it became necessary to replenish the resources of Malta was undoubtedly disturbing.

The rest of the operations in the Mediterranean during the month were all concerned either with direct assistance to the army or with attack on Axis sea communications. Tobruk, now once again in enemy hands, was bombed on August 4, 6, 16 and 22 by the Air Force with the object of hampering its use by enemy sea traffic. The enemy made frequent attempts to utilise lighters for his coastal traffic, and these provided very vulnerable targets, both for ships and aircraft. On August 3 several hits were made on them off Bardia, and on August 8 as far east as Sidi Barrani. At least 10 of them were sunk in the first 10 days of the month and others were damaged. On August 28 the enemy positions at El Daba were bombarded by night from the sea. During the bombardment one of the destroyers of the British force was torpedoed by an E-boat and seriously damaged, but by the exercise of good seamanship she was got back to harbour.

On August 5 the Admiralty announced a number of successes by a British submarine commanded by Commander Bryant, whose earlier exploits in Norwegian waters had made his name well-known to the public. He had sunk two supply ships, rescuing a number of survivors from one of them, and dealing with the other by gunfire in spite of protection given by an enemy shore battery on the coast of Sardinia. On August 12 another submarine hit an Italian cruiser with a torpedo. On August 18 and August 30 more of the British submarine's depredations were made public, a number of Axis supply ships crossing the Mediterranean under the escort of destroyers were torpedoed and most of them were almost certainly sunk though, on account of the presence of the escort it, was usually impossible for the submarines to wait and observe the results of their attacks. These operations were ably seconded from the air. During the first week of the month, American Army bombers reported sinking a 10,000-ton transport in convoy in the central Mediterranean. On August 11 the American heavy bombers attacked a squadron of Italian cruisers in the harbour of Navarino, and reported two hits on one of them and probable hits on two others. On August 27 a tanker was torpedoed in the eastern Mediterranean by an aircraft of the R.A.F., and it blew up and sank. On August 29 bombers and torpedo aircraft attacked south-bound convoys between Crete and Cyrenaica and destroyed at least three ships if not more. So expensive did the traffic become that the enemy took to sending troops by air instead of sea, a quick trip across the narrows south of Crete; two troop carriers were shot down on August 31.

On August 13, at dawn, a squadron under Rear-Admiral Vian bombarded the enemy positions in the island of Rhodes for 12 minutes. Aircraft spotted for the ships and considerable damage was done to shipping in the harbour and installations on shore. On August 22 the Admiralty announced the loss of the submarine Upholder, Lieutenant-Commander Wanklyn, V.C., which for many months past had been one of those operating from Malta with great efficiency and uniform success. The unusual course was taken of adding to the announcement a special tribute to the qualities and achievements of Mr. Wanklyn and his ship's company.

In the Pacific, sporadic attacks on either side continued in the Aleutian Islands. On August 8 American ships bombarded Kiska harbour, in which were lying a Japanese destroyer, four submarines, and ten merchant ships. One supply ship was sunk and three others damaged, as was the destroyer; damage was also done to the Japanese airfield under construc-

tion on shore and the camp in which Japanese forces were accommodated. Towards the end of the month—the precise date was not revealed—an American expedition carried in a large convoy landed in one of the Andreanoff Islands, the group next to that in which Kiska lies, occupied it and at once began the construction of an airfield. The passage of the convoy and the American operations ashore were completely unknown to the enemy, air reconnaissance having been quite impossible, on account of weather, for a period of some three weeks.

In the southern Pacific the Americans passed definitely to the offensive. On August 7 an American force of Marines landed in the Island of Guadalcanal in the southern Solomons and seized the large and well equipped airfield which had just been completed by the Japanese—who once more were taken by surprise—in the only practicable site for the purpose. At the same time the Americans landed and took possession of the harbour of Tulagi in Florida Island, just across the Sealark Channel from Guadalcanal. It was not until the night of August 8 that any Japanese counter-stroke was attempted to interfere with the American landing which was still going on.

About 1.45 a.m. on August 9 enemy aircraft dropped flares over the American transports, and Japanese cruisers and destroyers rounded the Island of Savo at high speed heading to attack them. They were engaged by an Allied protecting force and in the action that ensued, the Australian cruiser Canberra was severely damaged and set on fire; she sank later. The Japanese force then altered course to pass north east of Savo and encountered another Allied force of cruisers and destroyers. In the action that followed there the American cruisers Quincy, Vincennes and Astoria were severely damaged and also sank later in the night, and two American destroyers were also lost. It was believed that substantial damage was inflicted also on the Japanese ships, but it was not possible to observe its extent; but whether or not that was so, the Allied squadron, despite its losses, succeeded in achieving its object of protecting the military force under its charge, which in fact was not molested, for the Japanese squadron withdrew after its second action. The Japanese at once issued a flamboyant announcement that they had sunk a battleship, at least seven cruisers of the Astoria and Canberra classes, four destroyers and ten transports, and that they had damaged a number of other ships of those classes. A week later even more exaggerated claims were published.

Guadalcanal is a large and mountainous Island, covered with jungle, and movement and communications on shore are difficult. The American force, although it seized and held firmly the airfield and landing places close to it—and never relinquished its complete control of those positions—was not able to occupy effectively the whole island or to eliminate altogether the Japanese forces established in other parts of it. These forces held on and were reinforced from time to time by small Japanese parties passed across clandestinely from the New Georgia and Russell Islands, only 100 miles and 40 miles away respectively, and landed by night. Japanese submarines and destroyers also bombarded American positions on the island from time to time from the sea. Towards the end of the month, however, a serious Japanese attempt to expel the Americans was made. A force of transports, cruisers and destroyers approaching from the north on August 24 was attacked by both carrier-borne American air forces and by shore-based aircraft from Guadalcanal itself. The attacks were most effective, and American reports indicated that the

small Japanese aircraft carrier Ryuzo was severely damaged, a large carrier, unidentified, was hit by four bombs, a battleship, a cruiser, a destroyer, four other warships and a transport were hit and set on fire. The precise extent of the damage inflicted was not ascertained ; but in any case it was enough to determine the Japanese to give up their enterprise. The Japanese expedition retired to the north without reaching Guadalcanal itself. Throughout the rest of the month attacks continued on both sides, the Japanese continually raiding the Americans in Guadalcanal and Florida, and the Americans retaliating on the Japanese assembly port at Buin, on the southern end of Bougainville, and their advanced positions at New Georgia Island and Rekata Bay, on the north-east of Santa Isobel.

On August 17 a force of American Marines landed on Makin Island in the Gilbert groups in order to destroy the sea-plane station established there by the Japanese. A Japanese garrison of 350 was wiped out, only two surviving. Three wireless stations were destroyed, with two sea-planes, two supply ships and considerable quantities of fuel, provisions and other stores. A Japanese counter-attack, coming apparently from the Marshall Islands 200 miles away, was made by air during the following day ; but the sufferers from it were more amongst the Japanese garrison than amongst the attackers. After completing their object the American force withdrew ; their casualties were light. Major James Roosevelt, a son of the President, was second in command of the Marine force, which was commanded by Lieutenant-Colonel Carlson.

West of New Guinea the Japanese, early in the month, occupied the Kei, Aru and Tenimber Islands. There and in Timor they were attacked from time to time by Allied aircraft. Allied air attacks on Rabaul continued from time to time during the month. On August 25 a Japanese convoy was sighted south of the Trobriand Islands and the following day it reached the south-east tip of New Guinea and landed Japanese forces in Milne Bay. The Australians were ready for them there, and they were quickly defeated and driven into the sea with heavy loss, but remnants of the force were re-embarked by warships at night on August 31. It was evident that the enemy was out-generalled on this occasion, and fell into a well-laid trap.

SEPTEMBER

On September 2 Colonel Knox let it be known that there had been a steady diminution in the number of ships sunk by U-boats off the east coast of the United States. He pointed out, however, that this did not indicate that the U-boat menace was yet anywhere near being defeated ; it did not necessarily indicate more than that the American area having been made unhealthy for the U-boats, in accordance with their custom they would transfer their activities elsewhere in the endeavour to find an area less adequately defended. Mr. Churchill spoke to the same effect in Parliament on September 8. Emphasising that " We must regard the struggle at sea as the foundation of all the efforts of the United Nations," he said that although the losses at sea were still very heavy, the months of July, August and September, as far as it had run, had been a definite improvement on those which preceded them. At the same time he indicated that the production of new ships had then overtaken the losses of ships by enemy action, and that warfare against the U-boats—" even more important, because offence is more important than defence, however successful "—had been more effective than at any earlier period of the war. " In fact,"

he said, "very few days have passed without one or more being sunk or damaged by us or our Allies." This statement was very encouraging, more encouraging perhaps than the situation really warranted, by reason of the Prime Minister's inclusion of the phrase "or damaged," for the U-boats were then increasing in numbers in spite of the increase in those sunk by the Allies.

On September 13 the Germans issued a statement that 18 Allied merchant ships of a total of 121,500 tons had been sunk by U-boats in the western Atlantic and later in the day increased these figures to 35 ships of 229,500 tons and stated that a big battle was then in progress against an enemy convoy in the Atlantic. The next day a special announcement was issued reporting that in this battle 19 merchant ships of 122,000 tons, 2 destroyers and 1 corvette had been sunk, and that 6 other ships had been severely damaged by torpedoes and only small scattered remnants of the convoy had escaped. These contradictory figures were undoubtedly greatly exaggerated, but a convoy did suffer severely from U-boat attacks at that time. Another special German announcement was issued on September 28 that U-boats had pursued for several days and destroyed the greater part of a convoy of American troop transports destined for the United Kingdom, sinking 3 fast liners of a tonnage of 47,000 tons. The following day a formal denial of this announcement was issued by the Ministry of Information—an unusual course, but adopted doubtless by agreement between the British and American Governments, which were both concerned.

A number of U-boats were successfully attacked in the Bay of Biscay by aircraft of the Coastal Command during the month. On September 30 Mr. MacDonald, the Canadian Navy Minister, stated that at least 4 U-boats had been sunk in the western Atlantic during the month and two others probably sunk; one at least was destroyed by the Canadian destroyer *Assiniboine* which fought an intermittent engagement at short range in a fog. The battle finished by the *Assiniboine* ramming the U-boat and sinking her just as the crew appeared on deck ready to surrender.

On this side of the Atlantic the chief event was the passage of another convoy carrying war materials to Russian ports. Conditions on this occasion were more favourable to the convoy than previously, since the Arctic ice had receded and it was possible to route the convoy much farther north, at a greater distance from German airfields in Norway, than earlier in the year. On September 20 a special German announcement claimed complete success for their forces in the convoy battle. According to the German account the convoy consisted originally of 45 ships of which 33 were sunk while 8 others were so badly damaged that they must have sunk too. Aircraft were claimed to have sunk a destroyer and two patrol ships, and to have set on fire a second destroyer; U-boats to have torpedoed two more destroyers though they were unable to observe their actual sinking. Few accounts could have been more fictitious. The convoy's Commodore, Rear-Admiral Boddam-Whetham, stated in Moscow after his arrival that some 70 per cent. of the convoy reached its destination. About the most accurate part of the German statement was its estimate of the original size of the convoy which was not very far out. The full story is as follows:

The convoy was provided with a close escort of cruisers and destroyers and one aircraft carrier under the command of Rear-Admiral R. L. Burnett, flying his flag in the cruiser *Scylla*. In addition to that, since the German heavy ships *Tirpitz*, *Hipper* and Admiral *Scheer* were in northern Nor-

wegian ports, provision had to be made to deal with them if they should put to sea in the endeavour to join in the attack on the convoy. In all, some 70 warships were employed on the close escort and the covering force, though it is not possible to indicate how they were distributed between these two forces. The convoy was located by U-boats and enemy aircraft on September 9, on which day one U-boat was attacked and severely damaged. Once the enemy was informed of the fact that a convoy was on its way, and of its position and movements at a certain time, its future course could naturally be forecast with fairly narrow limits, and it was then possible for the enemy to concentrate U-boats for the attack. Accordingly intensive U-boat attacks were begun on September 12 and reinforced from September 13 onwards by massed air attack using torpedoes, bombs, and mines laid close ahead of the convoy. These U-boat attacks presented no unusual features beyond the large number of U-boats employed. Counter-attack on them was as continuous as their own attacks on the convoy. One U-boat was destroyed for certain on September 14, another on September 15 and four others were undoubtedly severely damaged, if not sunk.

The first air attack, made on September 12, was the heaviest of them all, made by over 40 aircraft at once, each carrying two torpedoes, which approached in line abreast at a low height above the sea. The attackers first came under fire from the destroyer screen, but this was not enough to check them appreciably. The destroyers were of course disposed chiefly so as to protect the convoy against submarines, and were therefore somewhat sparsely grouped from the point of view of defence against aircraft in mass. At the same time, however, Hurricanes from the aircraft carrier went in to the attack, and as the enemy got in to close quarters they encountered a tremendous volume of A.A. fire from the close escort of destroyers and corvettes, from the flagship *Scylla* and from the defensive armaments of the merchant ships in convoy themselves. Five of the enemy were seen for certain to crash into the sea during their approach, shot down either by Hurricanes or A.A. fire, and many others were so damaged that they could not possibly have got back to their base, though their destruction was not actually witnessed. Nevertheless, allowing for these losses it may be calculated that something like 70 torpedoes must have been fired at the convoy from close range in this one attack alone, and it would seem from survivors' accounts that most of the convoy's actual losses occurred then. Later attacks on that day were chiefly high-bombing attacks through gaps in the clouds, but two more attacks by torpedo aircraft in small numbers, nine and twelve respectively, were driven off and never got to close quarters at all.

The honours of the day went to the naval pilots flying the Hurricanes from the carrier. Admiral Burnett reported "I shall never forget the reckless gallantry of the naval fighter pilots in their determination to get in among the enemy, despite the solid mass of our defensive fire of all types." The next two days were much the same, except that no attack by numbers comparable to the 40 or 50 of the first onslaught was made. The enemy who got back to their base from the early attacks evidently reported the strength of the defence in the air provided by the Hurricanes in the carrier, for on September 14 attacks were concentrated chiefly on her; 17 torpedoes and numberless bombs were aimed at her, but she was not hit. Thirteen enemy aircraft were shot down on September 13, 24 on September 14 and a number on September 15; of the latter only three were

actually seen to crash, owing to low cloud, but the real number destroyed was undoubtedly greater.

That was the end of the outward convoy's adventures, and Admiral Burnett then turned his ships back to guard the homeward-bound convoy of ships returning from earlier voyages. By that time the German air forces had had enough and the homeward-bound convoy was not attacked from the air ; it too was under constant attack by U-boats, however, and it suffered some losses. In addition the *Leda*, mine-sweeper, was torpedoed and sunk and the destroyer *Somali* was torpedoed and disabled. She was towed for three days in the endeavour to get her back to harbour but on the return journey the weather gradually deteriorated and finally became so heavy that she sank. Four fighter aircraft were lost in the course of the operations, but the pilots of three of them were saved.

In narrow waters on September 8, a British patrol intercepted an enemy supply ship escorted by trawlers and R-boats within a mile of Cherbourg and attacked in spite of the support of shore batteries. One hit was made with a torpedo on the supply ship and substantial damage was done to the escort. There were no British casualties and one motor-gunboat was slightly damaged. At the same time a similar action took place close to the French coast in the Dover Strait. The guns of one of the escort in this later action were silenced, but there was no report of damage done to the supply ship they were escorting. On September 11 a series of actions occurred off the Dutch coast. A British offensive patrol intercepted an enemy convoy off the Texel and torpedoed a medium sized enemy tanker, which blew up, and a large German flak-ship of the escort was also hit by a torpedo. There was a brisk gun action with the escort, of which one armed trawler and one R-boat were very severely damaged, if not sunk. Shortly afterwards another patrol intercepted four E-boats and damaged them severely before they could get away. Later a second group of E-boats was engaged, and again one was damaged. The two enemy groups then joined and were reinforced, when they were engaged by yet another British patrol, and three more of the enemy boats were severely damaged. One British M.G.B. was set on fire and had to be destroyed, but her crew were taken off. On September 15 a German announcement that they had repulsed a British attempted landing near Cherbourg ; no British version of this incident was made public. Aircraft of the Coastal Command kept up their attacks on enemy shipping and ports. A German convoy was attacked off the Dutch coast on September 9. Cherbourg was bombed on September 15, two enemy supply ships were torpedoed off the Norwegian coast on September 18, and others off the Dutch coast on September 25.

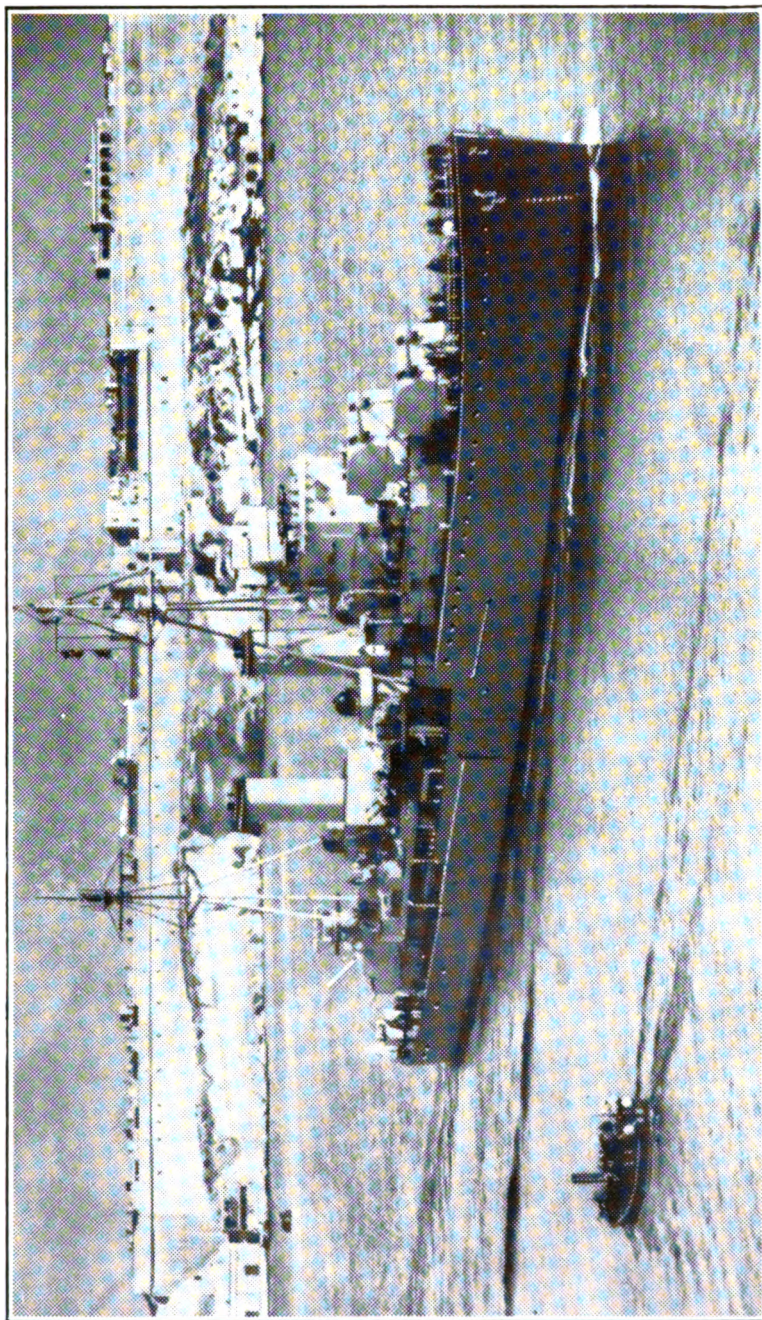
During the month it was made known that four U-boats had been recently destroyed in the Bay of Biscay by aircraft of the Coastal Command, evidently on the lookout for the U-boats there as they left or approached their bases on the French coast. Enemy efforts to counter the anti-U-boat operations in the Bay of Biscay led to the dispatch of Beau-fighters to support the reconnaissance and patrol aircraft on the anti-U-boat patrol. Beaufighters did excellent service there, shooting down three enemy aircraft on September 18 and two more on September 24. Bordeaux was bombed on September 17.

In the Mediterranean the British Army having been forced back into Egypt, the enemy's communications became more and more voluminous and thus presented a larger target to the British submarines and aircraft which were preying on them. On September 7 it was announced in

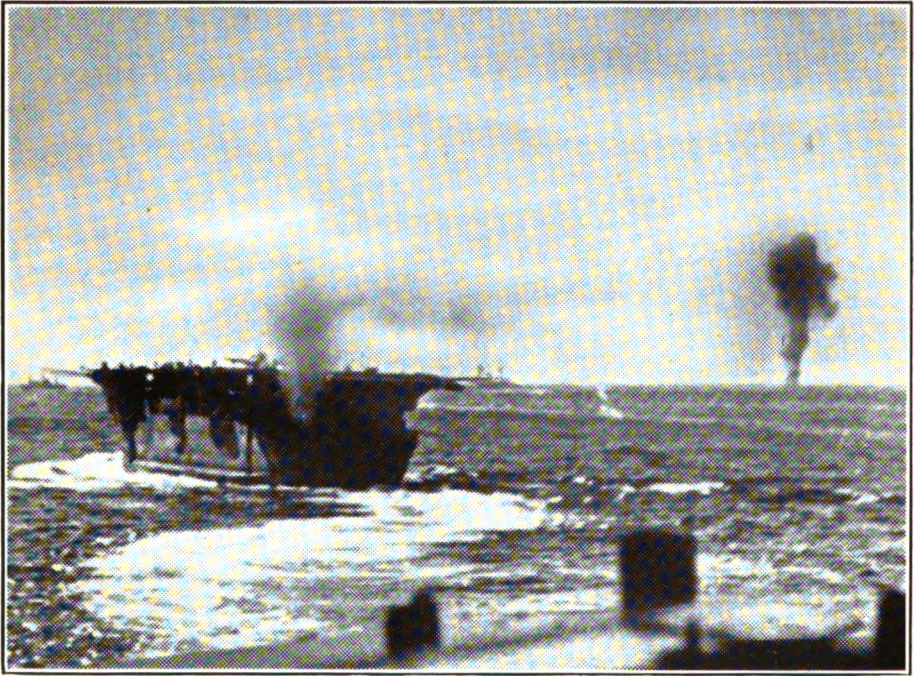
Alexandria that they had been taking a heavy toll of Axis shipping in the eastern Mediterranean as well as in the Sicilian narrows. On September 28 the destruction of five large supply ships by submarines was announced, and the probable destruction of three more. Torpedo aircraft of the R.A.F. sank a large ship off Derna on September 10 and ships were hit in an air attack on Suda Bay on September 14. Benghazi was bombed on several nights towards the end of the month.

Tobruk had been bombed practically daily from the time that it fell into enemy hands, and on the night of September 13-14, a combined raid was made there, also apparently with the object of disorganising Rommel's communications. The raid was not a success, but exactly what happened was not made very clear from the published accounts. The plan apparently provided for the landing of an advance party, whose task it was to put out of action, as at Dieppe, enemy batteries which could bear on landing parties approaching the shore. According to Italian accounts parachute troops were also landed, but there was no mention of this in British accounts. The landing of the advance parties was covered by a very heavy bomb attack from the air and they duly silenced the batteries which had been their objectives, reporting to that effect at 3 a.m. to the main body, which was being carried by a number of men-of-war, amongst which were the destroyers Sikh and Zulu. Up to that point things had seemed to have gone according to plan, but from then on there were a series of hitches which seemed entirely to have spoilt the timing of the whole operation and no doubt ruined its prospects of success. The main body, instead of landing immediately on receipt of the commandos' signal, was delayed for an hour and a half, with the result that the enemy were given that period in which to recover from surprise and to reorganise their defence, for the air bombing had stopped at the time at which the landing should have been made. Shore batteries which were still in action opened fire on the Sikh and Zulu when they were no more than a mile from the shore and therefore presumably well illuminated by enemy searchlights. The Sikh was hit and disabled, and since no smokescreen appears to have been available to shield her, she remained under heavy fire. The Zulu attempted to tow her away and had her in tow at one time; but the wire was cut by a shell, a thing which might not have happened in a thousand rounds. This caused more delay and before the tow could be again passed it was getting light and the attempt had to be abandoned. The Zulu withdrew, her retreat being covered by the fire from the disabled Sikh. The Sikh was eventually sunk but a number of her company succeeded in getting ashore, where they were made prisoner by the enemy. As the Zulu withdrew, she was attacked heavily from the air and at 9 a.m. she was hit by a bomb dropped in an attack made by seven Stukas at once. All on board—which included troops as well as her company—except guns' crews were taken off by other ships and she was taken in tow, but she sank before she could be got back to harbour. The enemy claimed to have taken 570 prisoners and to have destroyed the tanks which were landed. Since the nightly air attacks on the harbour of Tobruk continued after the raid, it must be concluded that the port was then still in use for Rommel's supplies, which would seem to indicate that the objects of the raid had not been in any way achieved. All the indications were that it was a complete failure.

In the Indian Ocean the operations for the complete occupation of Madagascar were resumed. Diego Suarez had been firmly in British hands since June and it was hoped that the French authorities in the rest of the



H.M.S. Penelope leaving Malta.
(Official Photograph. Crown copyright reserved.)



H.M.S. Argus under attack in the Mediterranean.

island would voluntarily adhere to the Allies, rather than maintain their allegiance to the pro-German Vichy. As that did not happen it became necessary to complete the occupation of the whole island. New landings, covered by warships, were made on the west coast on September 10 at Majunga, Ambanja and Morondava, and later further landings at Tuléar and Fort Dauphin in the south. In little more than a fortnight the whole Vichy resistance came to an end.

In the Aleutian Islands the airfield constructed by the Americans in the Andreanoff Islands was completed by September 14, by which time a large force of Army bombers and fighters was able to operate from there. On that day the Japanese in Kiska were attacked. Two minesweepers were sunk, three large cargo ships, three submarines and a number of small craft were damaged and much damage was done to the installations which the Japanese had set up on shore. It was estimated that as many as 500 Japanese troops were either killed or wounded in these attacks. There was some opposition by the Japanese, but it was ineffective; four Zeros were shot down and other aircraft destroyed on the ground. Smaller attacks were made on September 4 and September 24. On September 28 an enemy cargo ship was sighted at sea north-west of Kiska and attacked by American bombers. It was hit and was again attacked the next day, when a transport in Kiska harbour was also hit twice and set on fire.

In the south-west Pacific the Japanese continued to attempt to reinforce their troops in Guadalcanal, using the method of infiltration—small parties landed unostentatiously at a number of points. American air patrols working from the big airfield constantly attacked these landing parties, and inflicted substantial casualties both on landing craft and the troops in them. Reports of this destruction of landing craft were published at frequent intervals throughout the month. On September 15 it was announced that the progressive reinforcement of the American Marines in the island continued, and that 450 Japanese prisoners had been taken and removed to another place outside the area of operations. On the night of September 13 American positions in the island were shelled by a Japanese squadron which included both battleships and cruisers. They were attacked by American aircraft the next day and possible hits on two battleships were reported; the Japanese squadron then withdrew. On September 20, however, a Japanese cruiser was attacked by American dive-bombers not far from the island and severely damaged. During the month the Americans announced the loss of the destroyers Blue and Jarvis together with a small auxiliary transport. The aircraft carrier Wasp was sunk on September 15 by three torpedoes from a Japanese submarine; but as her loss was not witnessed by the enemy it was not announced until two months later. Throughout the month American air attacks on all the harbours and anchorages in the Solomons used by the Japanese were continued on every available opportunity.

In the New Guinea area the Allied offensive against the Japanese sea communications from New Britain to the Japanese sea base at Buna continued without ceasing. As the Japanese advanced across the Owen Stanley mountains towards Port Moresby, so their supplies coming in through Buna must have needed to be increased in volume, and on September 17 the Allies made a heavy air attack on landing barges off the beaches of Buna and Gona and store dumps on shore. Fifteen barges were destroyed and much damage done to dumps on shore. The attack was resumed the next day, after which air reconnaissance reported no less than twenty-seven

landing craft burnt out on the beach, besides any which may have been sunk while afloat. It was concluded that practically all the landing craft sighted earlier in the week had been destroyed. These successful attacks on the Japanese communications undoubtedly had an important influence on the Japanese reverse in the Owen Stanley mountains. Throughout the month Allied raids on Rabaul continued regularly, and on the other side occasional Japanese raids were made on Darwin.

Besides the losses already mentioned those of the destroyers *Ottawa*, of the Royal Canadian Navy, of the submarines *Urge* and *Thorn*, and of an armed trawler were reported during the month.

OCTOBER

During the month U-boats extended their operations farther afield. On October 14 the German High Command issued an announcement that U-boats off the Cape of Good Hope had sunk the British liners *Orcades* and the *Duchess of Atholl*, both over 20,000-tons, which were equipped as transports. It did not allege that they were carrying troops at the time they were sunk. They also claimed to have sunk two more ships in the same waters and fourteen others in other parts of the Atlantic in the last four days. Whether these claims were true or not, there is no doubt that losses continued to be dangerously heavy. On October 6 the Rome radio announced that an Italian submarine had hit with four torpedoes an American battleship, 800 miles off the West African coast. The battleship, which was alleged to be the *Idaho*, was seen to sink. There was no word of truth in this report. On October 20 the First Lord of the Admiralty said that it might be of interest and some encouragement if he stated that since the war started, "We have now an actual record of attacks on U-boats which have resulted in the sinking or damage of over 580 Axis submarines." This statement evoked considerable criticism on the grounds that the only really important figure is that of U-boats destroyed, to add to that the number damaged, which in the nature of things cannot be more than an estimate, is merely to produce an artificially swollen figure which has no real significance.

The conditions experienced in an Atlantic passage are illustrated by the following account of the adventures of a convoy during this month. The escort of the convoy was under the command of Commander R. Heathcote in H.M. destroyer *Fame*. It comprised another destroyer, the *Viscount*, and at least three corvettes manned by the Royal Norwegian Navy. Late one afternoon the presence of U-boats was reported, but no attack was made that night, possibly because of intermittent snow showers and heavy seas. Several attacks were made the next day, however, in spite of bad weather. One U-boat broke surface ahead of the *Viscount*, which at once went on at full speed in the endeavour to ram. The U-boat, however, just succeeded in avoiding the destroyer, whose guns crews were prevented from opening fire by seas breaking over her decks. The second attempt to ram also failed through a heavy sea breaking over the bridge at the critical moment, and the U-boat then dived. The *Viscount* attacked with depth charges and the result of the attack was assessed as "U-boat probably severely damaged." Throughout the next three days and nights a number of U-boats were sighted and the convoy suffered some losses. But during this period at least two more U-boats were damaged by depth charge attacks from the *Fame* and from the Norwegian corvette *Acanthus*.

Another U-boat was engaged on the surface by the Norwegian corvette *Potentilla*, which made many hits with gun-fire, and after the U-boat had evaded an attempt to ram, attacked with depth charges. Much oil came to the surface, indicating damage to the U-boat. The Norwegian corvette *Montbretia* also engaged a U-boat with gunfire, but without definite result. Just before dawn on the fourth day, the *Viscount* sighted yet another U-boat close ahead, and again went on to full speed to ram, this time successfully. She crashed into the U-boat and rode over her; as she drifted clear she received a quick broadside from every one of the *Viscount's* guns and sank a few seconds afterwards.

The following day yet another U-boat was destroyed by H.M.S. *Fame*. The weather had moderated, but was still thick and the *Fame* detected a U-boat submerged, dropped depth charges and brought her to the surface. The *Fame* at once opened fire on her, rammed her, and dropped depth charges as she passed clear. The U-boat, obviously disabled, remained on the surface and the ships of the convoy which were passing her at close range all fired on her as they passed. The U-boat sank shortly afterwards, and most of her company were picked up by the *Fame* and the *Acanthus*. Both the *Fame* and the *Viscount* suffered considerable damage from their ramming, but both reached harbour a few days later to be repaired and return quickly for further arduous Atlantic service.

A number of fights in narrow waters occurred during the month. On October 4 an engagement took place on the Belgian coast between British light forces and enemy torpedo boats and E-boats. One E-boat was set on fire and blew up, and damage was done to other enemy craft. One British boat was lost, but the remainder suffered only slight damage and small casualties. On October 6 enemy craft attacked a British convoy off the East Coast and claimed to have sunk a patrol boat and four ships in the convoy. It is not known what was the basis of this claim. On October 13 an important enemy supply ship was located, by naval aircraft which were operating as a unit of the Coastal Command, moving along the French Channel coast. The escort was so strong, consisting of a substantial number of torpedo boats and minesweepers, that it was evident that the enemy attached great importance to getting the ship through. That night she was attacked by British light craft off Cap de la Hague, and both the supply ship and two of the escorts were severely damaged by gunfire and set on fire. The remainder of the escort scattered and retired. Later an M.T.B. attacked and hit the supply ship with two torpedoes; she blew up and sank. Not long afterwards another British flotilla brought a group of enemy ships to action close to Guernsey, damaged a torpedo boat and blew up an R-boat. So close to the enemy coast did this engagement take place that enemy shore batteries joined in the fight, but proved quite ineffectual. Only one British boat suffered any damage and the only British casualties were two ratings wounded.

The next night another engagement took place, this time in the North Sea, in which one E-boat was sunk and two others were damaged without damage or casualties on the British side. Hanover and Havre were bombed by the R.A.F. during the month. On Trafalgar day, October 21, it was announced that the two new battleships, *Anson* and *Howe*, sister-ships of the *King George V* and the *Duke of York*, were both in service.

In the Mediterranean the heavy attacks on Malta were renewed during the month. By October 15, 94 enemy aircraft had already been brought down over the island and the total for the whole month was 152 raids in

which 138 enemy aircraft were destroyed. The reason of this intensification was evidently the enemy's desire to inhibit the use of Malta as a base for British attacks on Axis communications with Libya at a time when he must have been expecting, at any moment, General Montgomery's attack which actually began on October 23. Submarines and aircraft continued to take a heavy toll of Axis traffic. Lists of ships sunk by British submarines were issued by the Admiralty on October 6, 16, 21 and 25. On October 25 the Admiralty stated that 24 Axis supply-ships had been sunk or damaged by H.M. submarines during October, and of these 14 were definitely seen to sink. At least one destroyer escorting the Italian supply-ships was sunk by a submarine, and another was hit by bombs from British aircraft on October 11.

After the beginning of the Eighth Army's attack on October 23, no less than three enemy tankers were torpedoed by aircraft off the coast of Libya and Egypt in four days. The loss of fuel for the Axis Army thus caused must have had an important influence on his capacity for resistance, and provides yet another instance of the value of full co-operation between the services. On October 30 the enemy reported British attempts at landing at Mersa Matruh and in that vicinity, stating that they had successfully repelled all attempts. It seems probable that these were demonstrations, rather than serious attempts at landing in enemy occupied territory, designed to compel him to divide his forces, and thus weaken his resistance to the Army's main attack further inland. No British version of these operations was made public.

In the Pacific there were no very important developments in the Aleutian Islands. Well established in their new air base in the Andreanoff Islands, the Americans continued their attacks on the Japanese advanced point at Kiska on every day that the weather made air attack possible. It was estimated that by the first week in October the Japanese had established some 10,000 men ashore at Kiska, and had set up a seaplane and submarine base where they had accumulated sufficient stores and supplies to enable submarines to work from there during the winter; they were also busily engaged in the construction of an airfield. It was the completion of this last which the American attacks were chiefly intended to prevent.

On October 7 it was observed that the Japanese had apparently withdrawn from Attu and Agattu, an action which was hardly surprising, since these islands have no harbours and would be of little or no use as bases during winter. On October 16 two Japanese destroyers were hit by bombs at sea not far from Kiska and it was believed that they had been destroyed. In the middle of October it was announced that the Americans had occupied and fortified another of the Andreanoff Islands.

The struggle in the Solomons was intensified during the month, the Japanese making repeated efforts to strengthen their forces in Guadalcanal, and to expel the Americans from that island. Much of the fighting was carried on by air forces, but surface forces also came into action against one another towards the end of the month. During the night of October 3 American aircraft attacked a heavy cruiser and several destroyers which were landing troops in the island, and reported making at least one hit on the cruiser. The following day the cruiser, still burning from the bomb hit, was also hit by two torpedoes from American aircraft. On October 5 carrier-borne American aircraft from Admiral Ghormley's force attacked Japanese ships concentrated in the Shortland Island area, at the south end

of Bougainville, and reported damaging by heavy bombs a Japanese heavy cruiser, a transport and a seaplane tender ; and damaging two other cargo ships by smaller bombs, as well as destroying a number of aircraft on the ground or on the water. Other Japanese bases in the Solomons, such as Buka and Kieta, were also attacked at the same time. Three days later, on the evening of October 8, American aircraft again attacked Japanese warships engaged in landing troops in Guadalcanal and reported a hit on a cruiser of the Kako class, which was also seen to be still on fire the following morning.

Since these air attacks proved insufficient to prevent the Japanese forces in the island being steadily reinforced, Admiral Ghormley decided to bring surface ships into action for the purpose. Accordingly a task force under the command of Rear-Admiral Norman Scott, of which the precise composition was not disclosed, on the night of October 11 engaged a force of Japanese cruisers, destroyers and transports between the Islands of Savo and Guadalcanal itself. The action which followed was known as the Battle of Cape Esperance, and it proved to be a severe defeat for the Japanese. It lasted a bare half hour, but the Japanese losses, first reported as a cruiser, four destroyers and a transport sunk, were later amended to four Japanese cruisers and four destroyers sunk. The only American ship lost was the destroyer U.S.S. Duncan, but the cruiser Boise, Captain Moran, which was in the thick of the action, was severely damaged. The Japanese attempt at landing, which this force was covering, was abandoned and the transports withdrew. This successful night action was followed up by American air attacks on the Japanese warships retreating to the northward the next day, and at the same time substantial American reinforcements were landed from transports in Guadalcanal. The American transports were attacked, but without success, by Japanese bombers.

The Japanese, though checked by this reverse, were not deterred from pursuing their object of reinforcing their troops in Guadalcanal. Two nights later they brought surface forces again into action. During the night of October 13 an enemy squadron containing at least one battleship, besides cruisers and destroyers, bombarded the airfield and other American positions in Guadalcanal in order to cover the landing, west of Cape Esperance, of more troops from transports. Another Japanese landing was observed early in the morning of October 15, and attack by American bombers sank one transport, set two others on fire and damaged the battleship. By this period American Army troops had reinforced the Marines who alone up to then had provided the American land forces in the Solomons ; but it was not revealed when the Army first took a hand.

During the next weeks, both American and Japanese surface forces were engaged in the same neighbourhood. On October 17 American ships bombarded Japanese positions on the north-west coast of Guadalcanal ; during that night Japanese ships bombarded American positions on the north coast, but there was apparently no contact between these two surface forces. Air attacks continued to be made on either side. American bombers frequently attacked all the Japanese positions in the northern and north-eastern Solomons and any enemy warships or transports they found there. Japanese aircraft frequently attacked American positions and American ships ; the destroyers U.S.S. Meredith and O'Brien were both sunk by Japanese bombs between October 18 and 20. About this time the

Japanese appeared to have landed a force on the Russell Islands in order, presumably, to utilise them as an intermediate position for the attack on Guadalcanal.

From October 25 to 27 the engagement took place which was later named the Battle of Santa Cruz Islands. More than fifty Japanese warships, including battleships and aircraft carriers, were engaged. By this time Admiral Gormley had been relieved by Admiral Halsey, whose earlier energetic campaign against Japanese positions in other parts of the Pacific had made his name well known to the public. In this battle, as in those of the Coral Sea and Midway, the opposing fleets never came into contact, but remained about 150 miles apart while their aircraft attacked. The result of these engagements was that the Japanese suffered the following damage ; 2 aircraft carriers damaged, one so badly that its destruction seemed a possibility ; 2 battleships damaged ; 3 cruisers damaged ; more than a hundred aircraft destroyed and 50 more probably destroyed. The American loss was the aircraft carrier *Hornet*. She was attacked by 38 Japanese dive-bombers and 20 torpedo aircraft. All but six of these were shot down by anti-aircraft fire, but she was hit by one large delay-action bomb, which started fires on board, and shortly afterwards by two torpedoes, which disabled her fire-main. Nevertheless the fires were got under control and the *Hornet* was taken in tow by a cruiser. Just before dusk she was again attacked by high bombers and suffered more damage so that she had to be abandoned and sunk. While these actions were going on at sea the Japanese troops on land delivered heavy attacks on the American positions. These were beaten off with great loss ; 2,000 Japanese dead were later counted round the American positions while American casualties, killed and wounded, amounted to no more than 85.

After this engagement Japanese surface ships disappeared from the vicinity of the southern Solomons and Colonel Knox described the situation by saying that the Americans had won the first round. He warned his hearers, however, that it was no more than the first round, and that there was still much hard fighting ahead. The Japanese announcements described the action as one of the greatest naval actions since the beginning of war and represented it as a resounding victory for their forces ; they too, however, warned their people of yet heavier engagements to come. General MacArthur in Australia appears to have regarded the Solomons operation as quite unconnected with the campaign in which he commanded the Allied force in New Guinea, for he described the Solomons action as merely a " Navy show."

In the New Guinea area, activity at sea was confined to air action. On October 8 and 9 a Japanese ship was repeatedly bombed at Saumlaki, in the Tenimber Islands, and finally sunk. Frequent bomb attacks were made on Rabaul, the enemy's chief assembly point for shipping, 60 tons of bombs being dropped there on October 9 and lesser weights on other days, varied by raids on Buin, opposite Shortland Island. On October 18 and 28 hits were reported on Japanese warships there, and on the latter date a cruiser, a destroyer and two merchant ships were reported " believed sunk." The following day, a cruiser, a destroyer and eight merchant ships were reported " sunk or badly damaged " at Rabaul.

During the month, the loss was announced of the *Coventry*, A.A. cruiser, the *Veteran*, destroyer, and one armed trawler.

NOVEMBER

U-boat sinkings in the Atlantic continued on a high level during November. On November 8 a special announcement from Hitler's headquarters was broadcast from Berlin describing how a U-boat pack made contact with an east-bound convoy, of war materials and food, off the Canadian coast and sank sixteen ships of a total of 94,000 tons, as well as torpedoing two more ships, a destroyer and a corvette. The announcement concluded, "The convoy dispersed and only the remnants managed to escape in the dense fog." On November 11 another special announcement claimed that the battleship *Queen Elizabeth* had been torpedoed by a U-boat in the Atlantic, a claim which was amended the next day to read that it was not the battleship but the liner of that name. Needless to say, there was no basis for either claim. Another special announcement issued on November 27 purported to summarise results over a period which was not definitely specified, and stated that nineteen ships of 123,000 tons had been destroyed by U-boats in "the operational areas ranging from the Arctic to the approaches to the India Ocean." The total German claims for the month were stated, at the end of it, to amount to 166 ships totalling 1,035,200 tons. This, of course, was a gross exaggeration; but the total losses may well have been somewhere about half that figure, for it should be noted that they were possibly swollen as a result of the extension of operations to North Africa, which occurred during the month. Speaking in England on November 12 General Smuts emphasised that the U-boat was the most serious menace we had to face, and he urged the establishment of a special supreme staff to direct anti-U-boat operations.

On November 23 Mr. Cordell Hull, the American Secretary of State, announced that a satisfactory agreement had been reached with the French authorities in Martinique which would ensure the effective immobilisation of the French warships and aircraft lying there, and would prevent any use of the French West Indian Islands by U-boats or Axis forces. Details of the agreement were not made public.

In Home Waters clashes between light craft continued, though the onset of winter reduced their frequency. In the early hours of November 1 an enemy convoy of three merchant ships escorted by two torpedo boats and an armed trawler, which had been located the night before, was attacked by the Hunt class destroyer *H.M.S. Brocklesby*. She was at first accompanied by a flotilla of M.T.B.'s but the weather became too heavy for them and the *Brocklesby* went on alone. She was not sighted by the enemy until very close, when she was challenged by the escort. She at once opened fire and set one of the merchant ships on fire, as well as hitting another. The enemy were taken by surprise and the escort began firing on one another, whereupon the *Brocklesby* hauled off for a time and left them to it, assisted in so doing by a smoke screen laid by the enemy. Then she went in again, fired a few more shots, and once more withdrew when the escort opened fire, leaving them once more firing on one another. This happened several times and eventually the *Brocklesby*, having sunk one of the merchant ships and seen the other still well on fire, broke off the action and returned to base with no more damage than one shell hole in her funnel. Another brief action took place in the Channel the next night.

On November 9 a strongly escorted convoy was attacked off Terschelling by British motor torpedo boats. The attack was pressed home to

close range, an enemy tanker in the convoy was torpedoed and it was thought that another ship had also been hit by a torpedo. Several of the escort were hit by gunfire and once more they were left firing on one another when the British forces withdrew, having suffered neither casualties nor damage. Axis convoys off enemy occupied coasts were also attacked throughout the month with great frequency and effect by aircraft of the Coastal Command. The U-boat base at St. Nazaire was heavily attacked by bombers on November 17 and 23. Lorient and La Pallice were attacked by day on November 18.

In the Mediterranean the great event of the month was the landing in French North Africa on November 8. For some weeks Axis rumour-mongers had been busily spreading reports of the coming Allied landing in French Colonial territory, Dakar being tipped as the favourite place for it. There seems to have been no suspicion in enemy circles that it would really take place in Algeria and Morocco. Even when in the early days of November Axis news agencies reported a concentration of warships and merchant ships at Gibraltar, the only interpretation they put on that was that we were preparing to pass another convoy through to Malta. Nevertheless, British and American troops, conveyed in an expedition which in all comprised 500 ships guarded by no less than 350 men-of-war, at 1 a.m. on November 8 landed at Algiers, Oran and Casablanca. Only one transport of that enormous expedition was damaged by enemy action before arrival. It was torpedoed by a U-boat when 120 miles short of its objective, but all the troops on board took to their landing craft and completed the voyage in them, arriving in due course at their destination, though a few hours late.

The expedition as a whole was under the command of General Eisenhower of the United States Army; the naval part was commanded by Admiral Sir Andrew Cunningham. The expedition was in three parts. That part which landed at Casablanca was wholly American and came straight from the United States. The landing there was made under the command of Rear-Admiral Hewitt supported by a naval force under Rear-Admiral McWhorter. The covering force in the Atlantic, which presumably comprised battleships, was under the command of Rear-Admiral Giffen. Inside the Mediterranean the covering squadron provided to deal with any attempt at interference by the Italian Navy was commanded by Vice-Admiral Sir Neville Syfret with Rear-Admiral Lyster in command of the aircraft carriers. Rear-Admiral Sir Harold Burrough was in command of the landings at Algiers and later at Bougie; the landing at Oran was under the command of Commodore Thomas Troubridge.

The immunity of this enormous expedition from observation by the enemy until the moment of landing may have been partly the result of the enemy's having sent to the assistance of Rommel's army, air forces drawn from all other theatres of war, as far away as Norway and Russia. This may well have depleted the enemy aircraft available for reconnaissance in the Atlantic, and in any case his pre-occupation with the Libyan theatre, where Rommel's Army was in full retreat at that time before General Montgomery, probably accounts for the failure to organise adequate observation of the western Mediterranean.

The covering forces, both within the Mediterranean and outside it, were, of course, but a small proportion of the 350 warships mentioned. Each convoy was provided with a close escort of anti-submarine craft, destroyers and corvettes, anti-aircraft ships of the cruiser and sloop classes,

mine-sweepers to clear channels in waters through which they had to pass that might be mined and, most important of all, aircraft carriers for protection against enemy air attack as well as reconnaissance. It must be realised that the organisation and conduct of such an expedition, though it is in the fullest sense of the word a combined operation, up to the time at which the troops are able to go into action on shore—even later in the case of air forces, who must await the occupation an organisation of airfields before they can begin to operate—is wholly naval. An army or an air force embarked for a sea passage is completely helpless and, beyond its part in the service of the troopships' defensive armaments, can contribute nothing to its own defence. While it is within operational range of home airfields, the home-based air force contributes very largely to its defence, both directly and by reconnaissance. But once beyond that range the whole air reconnaissance and air defence of the expedition must be provided by ship-borne naval aircraft. Moreover, the air support of the Army, from the time it lands until airfields have been secured from which the Royal Air Force can operate, must be provided from the same source. As an example of this may be quoted the case of one airfield in North Africa which was surrendered intact to a naval fighter pilot who, leaving the rest of his squadron to patrol overhead, alighted there and took charge of it until it could be secured by the troops.

The detailed planning and organisation of the expedition was carried out, before the return of Admiral Sir Andrew Cunningham from his post in Washington, by a staff working under Admiral Sir Bertram Ramsay, to the excellence of whose work General Eisenhower paid a generous tribute. The enormous amount of work and intricate detail involved in the preparation of such an expedition is not always fully appreciated. Innumerable intricate details have to be gone into, decided, and pieced together into a coherent whole. For instance, in planning such an expedition every process of unloading transports must be foreseen. Labour will be required for that purpose as soon as a fully equipped port has been acquired. It must be decided whether it will be safe to rely on obtaining labour locally, when that stage is reached, or whether it will be necessary to take labour battalions with the expedition; if the latter, accommodation must be reserved for them in the transports, which will reduce the space available for troops and may well affect the number of transports required. Crews for landing craft, and beach parties for handling the actual process of landing on an open shore, have to be provided by the Navy, and they must be distributed throughout the transports carrying troops which are to be, or may have to be, employed on the first part of the landing, before a port becomes available. Transports in large numbers in a confined space cannot be handled expeditiously without the use of tugs. It must be decided whether it is safe to rely on being able to obtain tugs locally or whether they must be taken with the expedition. If the latter, provision for their refuelling on the way is essential. If an intermediate port is available, it may be done there, but precautions are necessary to provide against that process revealing that the expedition is on its way. If no intermediate port is available, then the programme of the passage must provide for refuelling tugs and minesweepers at sea, and the possibility must be foreseen that this process may be delayed by weather. Minesweepers, also commonly of small endurance, require similar arrangements to tugs. Communications present an intricate problem, and one on which the success of the expedition to a very large extent depends. These are but a

few of the problems which must be analysed to the last detail, and harmonised with one another, if a combined operation is to go smoothly from beginning to end and is not to be liable to disorganisation by the unforeseen hitches—known to Clausewitz as “the friction of war”—which are bound to occur from time to time. That the North African expedition went like clockwork from beginning to end is sufficient evidence of the thoroughness and excellence of the work of Sir Bertram Ramsay's staff.

The opposition encountered was on the whole weak. The plan at each landing place was, so far as details had become known at the time of writing, broadly similar. The landing was made in the vicinity of the port, whence the troops could advance and as soon as possible secure the harbour itself for the remainder of the force and its equipment to be put ashore rapidly. At the same time warships, specially strengthened for the purpose and carrying commandos, were to force their way into the harbour itself to overpower the batteries defending the entrance and secure the shipping already in the harbour against being scuttled. The forcing of the harbour at Algiers was done by the flotilla leader *Broke*; at Oran by the corvettes *Walney* and *Hartland*—formerly American coastguard cutters. The exploits of these three ships called for the highest degree of courage, skill and fortitude. That was forthcoming, but their work was not wholly successful. The *Broke* cut into the harbour at Algiers and landed her commandos, but they were not able to achieve that degree of control which had been hoped. The *Broke* was severely damaged and eventually sank. At Oran, the *Walney* and *Hartland* both also succeeded in entering the harbour and the parties they carried also succeeded in preventing many of the ships inside from being scuttled. But they were both sunk in harbour before their forces could achieve the measure of control that had been hoped. Nevertheless, resistance at Algiers ceased before night on the day of landing, and not long afterwards at Oran. At Casablanca resistance appears to have been stronger, and the battleship *Jean Bart* had to be disabled by the fire of the American battle squadron before it was overcome.

After Algiers was secured, a further landing was made at Bougie where, however, it was strongly opposed by Axis air forces working from Sardinia. It became necessary to withdraw the transports from Bougie as soon as the forces were established ashore, and it would seem that no great use thereafter was made of that port, by large ships at any rate.

There was no attempt at interference by the Italian fleet. When landings were first reported some Italian cruisers did actually put to sea, but before they had gone very far one of them was torpedoed by a British submarine, disabled, and had to be towed back to harbour. That was enough for the others and they turned round and went back to harbour too. Two days later three Italian cruisers and three destroyers were attacked by another British submarine. She made two hits with her torpedoes, but was unable to observe the final result.

While these landings were being made in the western Mediterranean, the Navy was effectively co-operating with the Eighth Army at the other end. On November 7 the enemy positions near Mersa Matruh, which was then still in their hands, were shelled from the sea with good effect and without damage or casualties to the bombarding force, either from the guns on shore by which they were engaged or by the air attack which was made on them while returning to Alexandria the next day. Successes by

British submarines were announced by the Admiralty on November 6, 10, 22 and 28 and naval aircraft from Malta sank a number of tankers and supply ships in the course of the month. As the Army advanced through Libya the usual assistance—transport and supply by sea—was given by the Navy. Each enemy port from Tobruk to Benghazi was bombarded while still in enemy hands and occupied as soon as the Army had driven the enemy out, to be put into full use for traffic a day or two later.

At the time of the Allied landings no move was made by any ships of the French Fleet, which in the Mediterranean were all concentrated at Toulon. On November 27, however, when the Germans marched into Toulon and attempted to seize the fleet, the ships were all scuttled by their crews and completely put out of action. Four submarines succeeded in getting away, three of them to reach North African ports and join the Allies; the fourth, which called at Barcelona, was unable to leave again within the period granted by the Spanish authorities and was interned there. It was reported that another, which left harbour at the same time, was blown up by one of the magnetic mines which German aircraft laid in the entrance channel as their troops were marching into the dockyard.

As soon as the North African landing was made the Germans concentrated U-boats on the traffic, which of course became very heavy, from Allied bases to the Moroccan and Algerian ports. This concentration gave an opportunity for intensified attack on them, and on November 15 it was announced that already thirteen of them had been sunk since the operations began. That day a special announcement from German Headquarters claimed that eighty-nine ships had been destroyed or damaged by them in the western Mediterranean alone, including fourteen transports, one 10,000-ton tanker and seven other large ships to a total of 188,000 tons. These figures were stated by the First Lord of the Admiralty to have been grossly exaggerated.

The month closed with the situation in the Mediterranean profoundly altered in favour of the Allies and to the detriment of the Axis. Instead of being penned into the eastern extremity of the sea through lack of air support elsewhere, as the British sea forces were up to the end of October, the beginning of December saw them using the whole Mediterranean freely; for the Allies held the whole North African seaboard except the small length of the Tunisian coast in the centre, on which Allied Armies were then pressing from each side.

Two developments occurred in the Indian Ocean during the month. On October 29 the island of Réunion was taken over for the Allies by a force of Free French, conveyed and landed under cover of the British Navy. The last Vichy-controlled territory in that ocean was thus placed beyond the risk of being made available to the Axis.

The second was the destruction of a heavily armed Japanese disguised raider by H.M.L.S. Bengal and the Dutch M.S. Ordina, each armed with a single 4-in. gun. The Bengal had recently been completed in an Australian yard, and on her maiden voyage was escorting the Dutch tanker when, on November 11, 1,000 miles south-west of Java, they encountered the Kikoku Maru, 10,000 tons, and Kunikawa Maru, 6,863 tons, each armed with six 5.5-in. guns, torpedo tubes and two aircraft catapults. The Bengal immediately steamed straight towards the larger enemy ship in order to give the Ordina the opportunity to escape. Her master, however, would not leave the minesweeper to face two powerful enemies alone, and stayed with her; both ships engaged the enemy. After a brief engagement at

ranges down to 2,500 yards, the larger enemy ship was evidently hit in the magazine, for she blew up and sank ; the other ship remained outside 8,000 yards, and did severe damage to the *Ordina*, disabling her and killing her brave captain, and then, after searching for survivors from her sunken consort, withdrew. The *Ordina's* company then repaired damage as best they could, and got their ship under way again. The *Bengal's* ammunition was exhausted and she had been hit several times and slightly damaged. Both ships reached India in due course.

On November 2 the Navy Department announced that U.S. submarines operating in the Far East had recently sunk seven enemy ships and damaged three. Included in the latter was a merchant ship converted to an aircraft carrier, which was set on fire. On November 12 the sinking of seven more Japanese ships there was announced, making the total for American submarines in the Far East since the outbreak of war ninety-three ships sunk, twenty-one probably sunk and twenty-seven damaged.

In the south-west Pacific, in spite of the check received in the Battle of Santa Cruz Islands the Japanese succeeded in landing some more reinforcements in Guadalcanal on the night of November 2. Though American destroyers bombarded Japanese positions on the island that night they failed to prevent the new landing. On November 8 American M.T.B.'s attacked two destroyers close to Lunga Point in Guadalcanal and reported that one of them was probably sunk. That afternoon aircraft attacked a force of one Japanese cruiser and ten destroyers, 150 miles north of Guadalcanal, and reported the cruiser and one destroyer badly damaged and probably sunk.

On November 11 began the series of actions by sea and air forces, both by day and night, which lasted until November 15 and were afterwards named the Battle of Guadalcanal. On the evening of November 11 American aircraft attacked Japanese destroyers off New Georgia Islands. The next day American warships bombarded Japanese positions in Guadalcanal and destroyed some seventy-five Japanese landing craft which were found either on the beach or at sea close to the island. That afternoon they were attacked by Japanese aircraft and one bomber crashed into the cruiser *San Francisco*, flagship of Rear-Admiral Daniel Callaghan who was in command of a detachment of the fleet, and killed thirty of her company. The destroyer U.S.S. *Buchanan* was damaged by Japanese artillery fire from the shore. These were the only casualties suffered that day by the American forces.

In the small hours of November 13 the real Japanese effort began. The plan seems to have been to prepare the way for a further landing by bombardments by a force composed of two battleships of the *Kongo* class, two heavy cruisers, four light cruisers and some ten destroyers. This force reached its bombarding position soon after midnight, and it was at once attacked by an American surface force, which also comprised battleships besides cruisers and destroyers. The engagement took place at close range and it would appear that the Japanese were surprised and thrown into confusion, for at one period Japanese forces were firing at each other.

Again U.S.S. *San Francisco* was in the thick of the fight, steaming right into the Japanese fleet and engaging almost at point blank range. She sank one ship outright, and disabled a battleship, silencing her guns so that she fell an easy prey to American torpedoes the next morning. The *San Francisco* was hit many times and severely damaged. Admiral Callaghan was killed and many other officers and men killed or disabled,

but she was brought out of action by a lieutenant commander, and was able to return home for repair. At daylight American air forces attacked disabled Japanese warships still afloat after the night action and completed their destruction.

In spite of this decisive defeat of the naval bombarding force, the twelve Japanese transports continued to approach Guadalcanal as if the preliminary stage of the operation had gone according to Japanese plan. In the small hours of November 14, Japanese surface ships again bombarded the intended landing positions. As the transports approached at dawn that morning they were attacked by American air forces and eight of them were sunk. The following night the action between surface ships was renewed and again the victory was with the Americans. In the course of the night action the remaining four transports were destroyed, and were found, beached and burnt out, the next morning. Of the Japanese naval force, one battleship was sunk and another large ship which was either a battleship or a very large cruiser; eight cruisers and six destroyers were also sunk. The American losses were the cruisers Juneau and Atlanta and the destroyers Cushing, Preston, Benham, Walke, Monssen, Laffey and Barton. Rear-Admiral Norman Scott was also killed in the battle.

The second round had also been won by the Americans. Admiral Nimitz, Commander-in-Chief of the Pacific Fleet, commenting on this action said, "The engagement justifies our faith in battleships. Our battleships contributed materially to the heaviest Japanese losses. Our success was also helped by the apparant absence of Japanese aircraft carriers." The Japanese accounts of this battle were more than usually mendacious. As usual it was claimed as a resounding victory for Japan. They admitted the sinking only of one cruiser and three destroyers and said nothing at all about their losses of troops—which must have amounted to some 30,000 men drowned—except to say that seven transports were damaged.

On November 25 it was reported for the first time in an American announcement that American aircraft had bombed "enemy installations" at Munda, in New Georgia, some 150 miles north-west of Guadalcanal, and thereafter such attacks were made almost daily. It would seem that the Japanese were trying to establish an airfield there, to take the place of the Henderson airfield of Guadalcanal, lost by them to the Americans. The American attacks were presumably designed to prevent the completion of the task.

On November 28, American aircraft attacked yet another Japanese convoy, of two supply ships and three destroyers, off Guadalcanal to the north and hit one of the supply ships with five bombs. Two nights later another night battle was fought in which a number of troop transports and supply ships, escorted by cruisers and destroyers, were again engaged by American cruisers and destroyers in the same waters. Two troopships and a cargo ship were sunk and the landing was frustrated. Of the escort, six ships were sunk, four of which were destroyers and the other two either larger destroyers or cruisers. The American squadron lost U.S. Northampton, 8-in. cruiser, sunk and other ships damaged.

In New Guinea, things were also going in favour of the Allies, who were steadily driving the Japanese back across the Owen Stanley Mountains and back on to their shore bases at Buna and Gona. This situation called for increased Japanese reinforcements, and accordingly two large liner troopships, estimated to carry about 7,000 men, were despatched thither

by the enemy at the beginning of the month. General McArthur made no use of naval forces in this theatre—whether there were any under his command is not known—but relied entirely on air forces to interrupt the enemy's sea communications, a duty in which they were increasingly successful. The two liners, escorted by a light cruiser, a destroyer and nine Zero fighters were located approaching New Guinea from the north, and were attacked by bombers three times on November 8. Only "near hits"—the American term for near misses—were made at first, but that was enough to induce them to turn back. In the last attack, one of the liners was hit and set on fire; as she was in the same position the next morning, and was still burning, it was evident that she was a total loss. No reinforcements reached the hard-pressed Japanese troops on the Kokoda trail.

The Japanese then, as in the Solomons, abandoned the method of sending troops in transports, evidently as being too expensive even for them, and began to send them across in ships-of-war. On November 18 eight ships, most of which were destroyers, brought reinforcements. Allied air forces were at first prevented by thunderstorms from getting at them, but later succeeded in sinking a light cruiser and a destroyer and damaging another destroyer.

On November 25 two destroyers were sunk and a third damaged in a similar attempt. On November 30, four destroyers were attacked in the Vitiaz Strait; two of them were set on fire and sunk and the other two retired. So effectively were the Japanese sea communications thus harried that their forces in Papua could not be kept up to strength, and were gradually forced back to their coast starting points at Buna and Gona.

Throughout the month, air attacks were made continually on Japanese positions in Timor. Towards the end of the month a German supply ship or blockade-runner of some 8,000 tons was intercepted by naval forces off the west coast of Australia. The crew scuttled her when fired on and seventy-eight prisoners were taken.

During the month, the loss was announced of the destroyers *Broke* and *Martin*, the corvettes *Gardenia*, *Walney* and *Hartland*, the sloop *Ibis*, the A.A. ship *Tynwall*, the auxiliary aircraft carrier *Avenger*, the depot ship *Heda* and the minesweeper *Algerine*, in the North Africa operation. In addition, the loss of the submarine *Talisman* was announced.

DECEMBER

The losses by U-boat sinkings were less in December than in the preceding months; this was announced after the close of the year by the U.S. Office of War Information in Washington. It was clear, however, from the stories—of which an example is given below—of the experiences of convoys crossing the Atlantic, that the U-boat campaign was still presenting the United Nations with their greatest problem. Dealing with the suggestion made by General Smuts, mentioned in the chronicle for November above, the Prime Minister in Parliament on December 15 said: "There is no question of appointing a naval super-Commander-in-Chief under the Admiralty or a special Minister to deal with the anti-U-boat campaign. The war at sea is all one, and the Admiralty organisation has been adapted by continual improvement and refinement to deal with it as a whole. It would be impossible to disentangle the anti-U-boat warfare

or its control from the general organisation, and I should not recommend any attempt to do so."

The ordeal through which Atlantic convoys passed is again illustrated in some small measure by the experiences of one in December.

The escort of this convoy, like that described in the October chronicle, was under the command of H.M.S. *Fame*. It comprised the Polish destroyer *Burza*, the British corvette *Vervain* and the Norwegian corvettes *Eglantine*, *Rose* and *Potentilla*. Again the convoy suffered some losses in a series of some thirty-five actions, continued throughout four days and four nights. The attack opened with the approach of a small number of U-boats which attempted to close the convoy about midnight on the surface. The visibility was good and the escort immediately engaged them. One U-boat was hit by the *Eglantines'* guns and when it dived was attacked with depth charges. The others were driven off. The *Eglantine's* U-boat may well have been destroyed, but there was no definite evidence to that effect and it was therefore not rated higher than "severely damaged." Later that night one ship in the convoy was hit by a torpedo from a U-boat and set on fire. By the light of the flames the *Eglantine* sighted a U-boat on the surface at close range and hit it several times with gunfire. A second U-boat, sighted while this action was in progress, was also engaged by the *Eglantine*. Both were compelled to dive and their attack on the convoy was thus foiled. At the same time the *Fame* and the *Rose* were engaging two other U-boats, one of which was attacked with depth charges when it dived and the other was driven off. U-boat attacks continued with hardly a pause throughout the night, but they were all driven off by the escort and failed to close within range of the convoy.

At daylight the next day aircraft of the Coastal Command took a hand in the fight, as the convoy had then arrived within their range. Soon after daylight one U-boat was sighted by aircraft and attacked with depth charges. The result was a very large patch of oil dotted with debris, and the attack was rated "U-boat probably destroyed." During that day aircraft made ten more attacks on U-boats, which were thereby prevented from reaching a position from which to attack the convoy, even if they escaped damage from the aircraft's bombs and depth-charges. That afternoon the *Potentilla* made a very promising attack on one U-boat.

The next morning the weather was bad again and no attacks were made until the evening, when it had moderated once more. That night another U-boat was almost certainly destroyed by the *Burza*, in a depth-charge attack after the U-boat had evaded ramming by a crash dive. Before daylight the next day the *Rose*, *Potentilla*, and *Vervain* frustrated several more attempts by U-boats to close the convoy and during the next day aircraft made six more attacks, one of which resulted in the probable destruction of the U-boat. The U-boats' attacks then slacked off and all were driven off without damage to the convoy, which reached the United Kingdom after a further thirty-six hours unmolested passage.

The Allied occupation of North Africa had greatly increased the efficiency of the blockade. Before November 8, French Colonial produce had been reaching Metropolitan France, after trans-shipment in North Africa, at the rate of about 4,000,000 tons per year. Much of this comprised vegetable oils, much in demand in Germany for the manufacture of soap, and glycerine for explosives. Consequently some 80 per cent. of what was reaching France went straight through to the Axis powers. All

this was cut off by the Allied control of French North Africa. It thereupon became much more important to the enemy to get imports through direct by sea to occupied France, and attempts to do so were multiplied. The increased efficiency of reconnaissance in the Atlantic, which followed from the employment of long-range aircraft collaborating with warships in operations against the U-boats, made such blockade running more difficult. On December 17 the Admiralty announced that an enemy merchant vessel of some 5,000 tons had been intercepted by our patrols in the Atlantic. What happened to her was not announced, but it is certain that she did not reach a German occupied port.

On December 8, according to a German announcement, a small British reconnaissance raid was made at the mouth of the River Gironde. The Germans alleged that it had been repelled and was abortive. No account of this small operation was issued from the British side, in accordance with British policy in such circumstances.

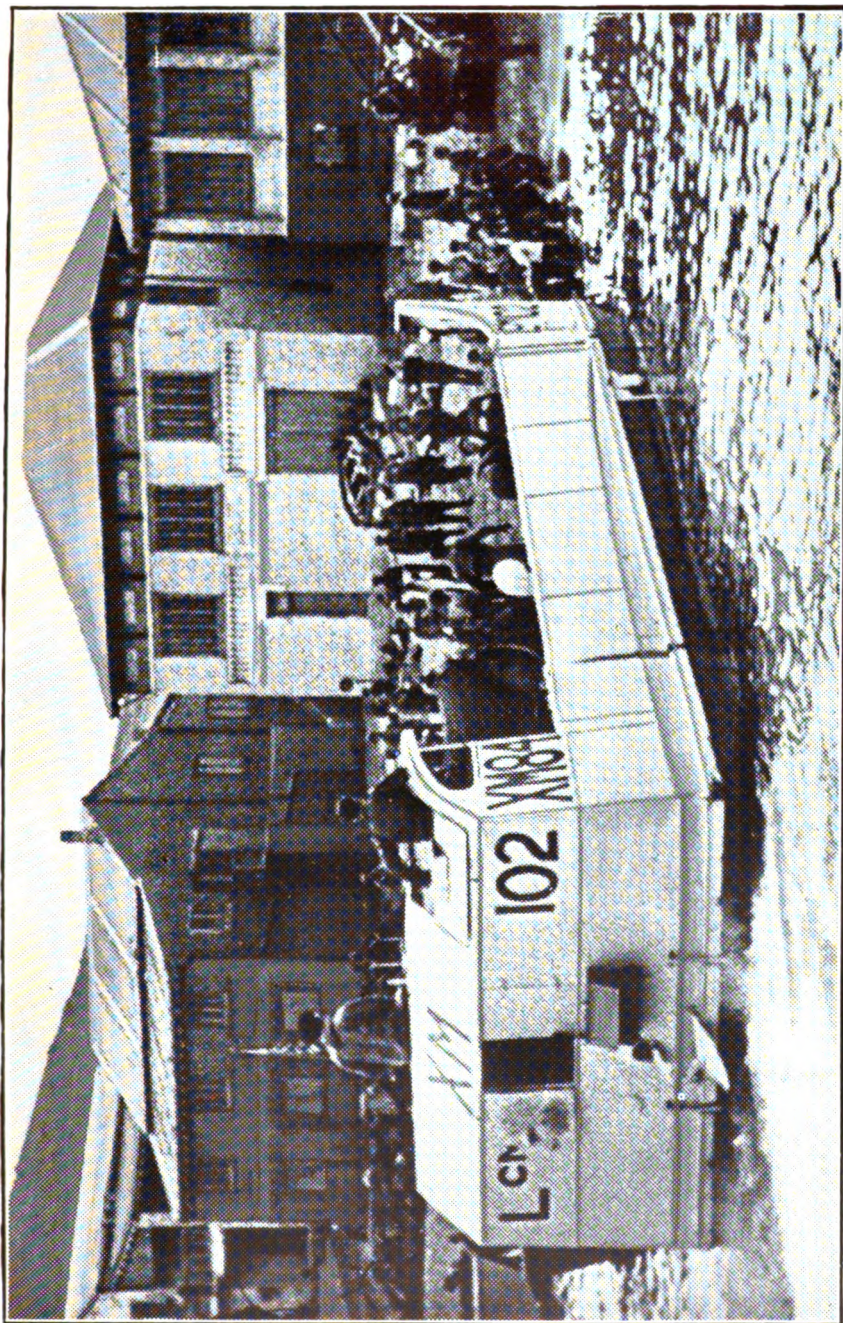
On December 11 British light forces on patrol off Dieppe intercepted an enemy convoy of two supply ships escorted by four patrol craft. One of the supply ships was sunk together with one of the escort and an enemy ship was hit by a torpedo, but it was not possible to observe which it was. All the rest of the enemy ships were hit by gunfire. Damage on the British side was trivial and casualties were light. As usual the offensive against enemy coastal traffic was kept up almost daily by the Coastal Command. The U-boat base at Lorient was bombed at the end of the month.

At the end of the month also another convoy was started off for North Russian ports and reached them intact after enemy attacks had been beaten off. The story of these engagements, however, belongs to the chronicle of 1943.

In the Mediterranean, the outstanding event of the month was a night action off Tunisia on the night of December 1 by a force consisting of the cruisers *Aurora*, *Argonaut* and *Syrius* and the destroyers *Quiberon* and *Quentin*, under the command of Rear-Admiral Harcourt. An enemy convoy had been sighted from the air in the afternoon and Admiral Harcourt made contact with it shortly after midnight. The convoy had been scattered and tried to escape observation behind smoke screens, but four of the ships in it and two of the escorting destroyers were either sunk or left afloat as blazing wrecks. The British force suffered neither damage nor casualties in the night action, but it was attacked by air the next morning while returning to its base. All torpedoes fired at it were avoided but the *Quentin* was hit by a bomb from a dive bomber and was so damaged that she sank later, though the greater part of her company were saved. On the night of December 3 another south-bound Axis convoy was attacked, first just after dark by torpedo aircraft, presumably from Malta, and later by destroyers under the command of Captain Poland. The torpedo aircraft sank two ships in the convoy and disabled one torpedo boat of the escort which was later sunk by Captain Poland's ships.

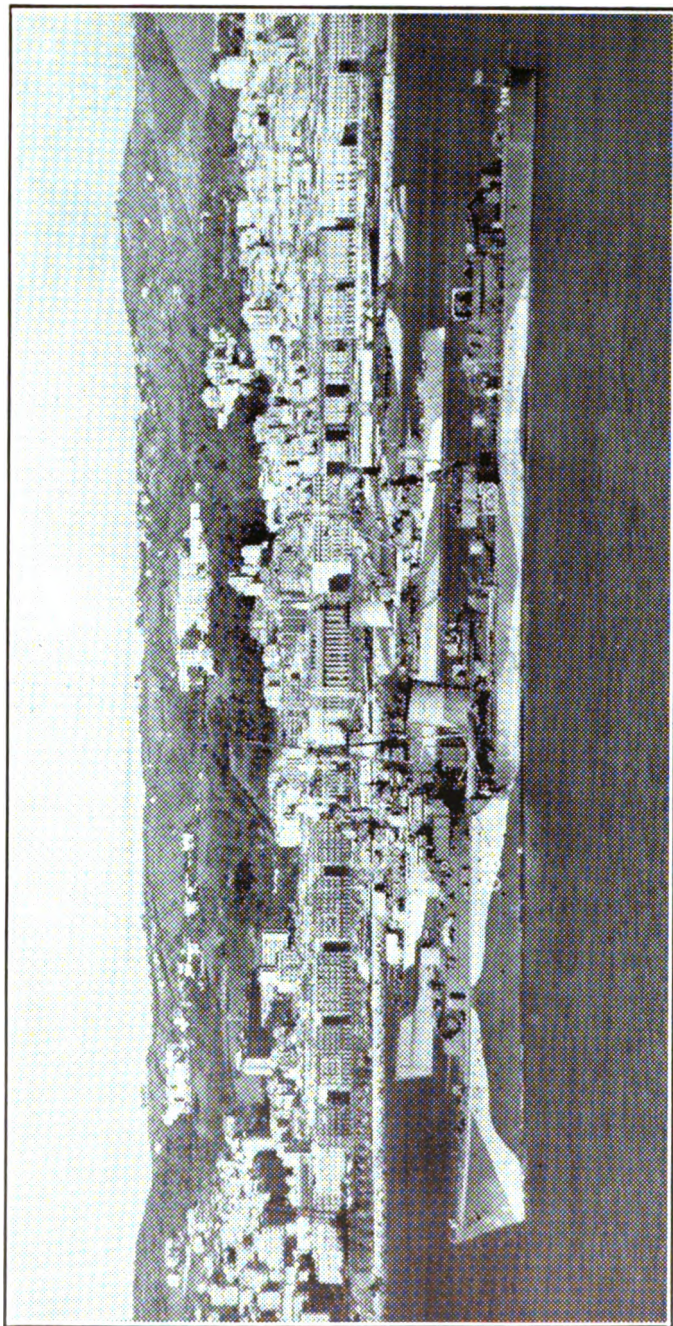
Fresh supplies were put into Malta in the course of the month and on December 23 the Admiralty announced that the island had received large reinforcements of war material and supplies without serious interference by the enemy. During the replenishment of Malta one enemy submarine was destroyed by the Greek warship *Queen Olga* and H.M. destroyer *Petard* operating in collaboration.

Allied long-range aircraft throughout the month made frequent



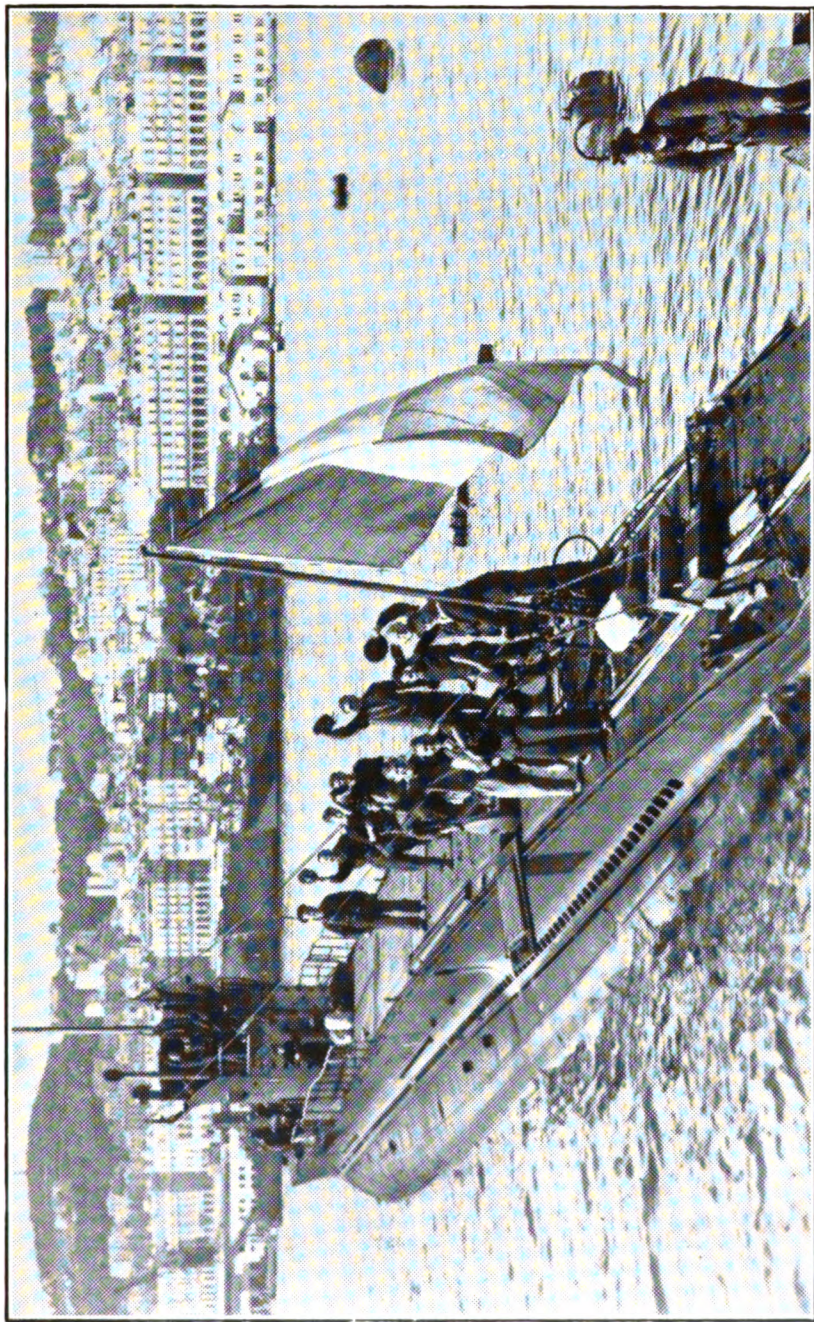
Landing at Oran.

(Official Photograph. Crown copyright reserved.)



British destroyers in Algiers Harbour.

(Official Photograph. Crown copyright reserved.)



French submarines, escaped from Toulon, arriving at Algiers.



French warships burning in Toulon harbour.

(Official Photograph. Crown copyright reserved.)

attacks on the Italian bases whence the Axis forces, now penned into Tunisia, were being supplied by sea and by air. On December 4 a heavy attack was made on Naples in the course of which it was reported that hits were made on an Italian battleship and two cruisers. A constant air offensive was kept up on the ports of Bizerta and Tunis, with attacks at a lower rate on other less important ports to the south. Submarines and torpedo aircraft based on Malta also made almost daily attacks on Axis traffic across the short sea passage from Sicily to the Tunisian peninsula and on the coastal barge traffic along the Tunisian coast. On December 18 a report was issued of a number of enemy supply ships sunk by British submarines in that area followed up by similar reports on December 19 and 29. The year closed in the Mediterranean with the Allied Armies closing in on the remnant of the Axis forces, then penned into the small corner of the African coast in Tunis.

In the Indian Ocean, ships of the Eastern Fleet on December 20 bombarded the harbour of Sabang, on the island of Pulo Weh, just off the north-western tip of Sumatra, which was in use by the Japanese.

On the night of December 23 an air attack was made on the Japanese in Wake Island, who were taken completely by surprise. Thirty-six tons of bombs were dropped, with good effect.

On December 22, the Japanese positions in Kiska were attacked by American heavy bombers and their submarine base there was damaged.

In the Solomons, on December 8, American dive-bomber and torpedo aircraft attacked a Japanese force of ten cruisers and destroyers which had been located about 150 miles north-west of Guadalcanal and steering south-east. It was evident that the Japanese had abandoned the attempt to get transports through, and were sending supplies and reinforcements by warships. Two Japanese cruisers were hit by bombs and two other ships, which may have been cruisers or destroyers, were hit by two torpedoes each. One of these four was seen to sink the next day and the other three, though afloat, were still burning. The remainder withdrew. There was a similar engagement a week later. On December 11, eleven Japanese destroyers were sighted steering for Guadalcanal, and were attacked that evening by dive-bombers. Five of them were hit by bombs, but the remainder went on. Just after midnight they were attacked by "U.S. surface forces guarding the island"—an expression which seems to have indicated what, in home waters, the British Admiralty calls "light coastal forces." One Japanese destroyer was sunk, one set on fire and probably sunk, one damaged, for an American loss of one M.T.B.

The attempt to supply by warships the Japanese force still holding out in Guadalcanal had failed too, and it was becoming evident that they were hard pressed. At the end of the month, the enemy was reduced to supplying them by air, and dropping food and ammunition by parachute.

On December 26 a small group of Japanese ships was bombed in one of the New Georgia anchorages, and one 3,000-ton ship was sunk. Two more enemy cargo ships were sunk there two days later.

Throughout the month daily raids were made on the would-be airfield at Munda, and occasional attacks were also made on the Bougainville anchorages whenever any ships were observed to have collected there.

In New Guinea, Japanese attempts to reinforce their men in Papua by warships continued, but with no greater success. On December 8, six destroyers trying to reach Buna were attacked by Allied bombers, which sank one of them, damaged another, and turned them back. When

by the middle of the month the Japanese in the Buna-Gona area had been exterminated, they landed new forces, some 20 and 50 miles further north-west along the coast, from two cruisers and three destroyers at night. But they were attacked from the air during the landing and some twenty landing craft were destroyed, with heavy casualties. Attempts to raft ashore supplies of ammunition, fuel and stores were frustrated by machine-gun fire from the Allied aircraft. Another Japanese cruiser was reported to have been sunk on December 20.

During the month the loss was announced of the submarines Unique and Unbeaten, as well as the Triton of the Greek Navy, the destroyer Penylan, the minesweepers Cromer and Armidale—the latter of the R.A.N.—and five armed trawlers.

H. G. T.

CHAPTER II.

FOREIGN NAVIES.

EVEN more than in 1941, the tonnage added to the fleets of the Allied navies in the past year far surpassed the corresponding amount produced by the enemy nations, despite the addition of Japan to their ranks. All Germany's efforts were concentrated on turning out U-boats at the fastest possible rate, variously estimated at from 120 to 250 in twelve months. Whatever the true figure may be, it has been stated officially both in this country and the United States that it exceeds the rate at which enemy submarines are being destroyed.

In the first six months of 1942 shipping losses due to U-boat activity, mainly off the Atlantic coast of America, assumed alarming proportions; but at the end of the year they appeared to be coming under control again, though still too high to be regarded with complacency.

A good deal of tonnage was lost in the Far East, as Japanese forces spread southward to envelop Singapore and the Dutch Indies. An incursion into the Bay of Bengal in April by a Japanese squadron which included capital ships and aircraft carriers resulted in the loss of H.M.S. *Hermes*, *Dorsetshire*, and *Cornwall*. Fortunately, the reinforcement of our Eastern Fleet was completed in time to check this dangerous move on the part of our Oriental enemy, whose energies have since been fully occupied in the Pacific.

Two British, one American, and two Dutch cruisers, with a number of destroyers, and sundry ancillary vessels, were sunk in the Battle of the Java Sea, which began on February 27, fighting continuing intermittently until the first days of March.

Very great credit is due to the United States Navy for its early recovery from the Pearl Harbour disaster. It has now been disclosed that by Japan's surprise attack on December 7, 1941, all eight of the United States battleships lying in Pearl Harbour were put out of action. Had the enemy realised the full extent of their success, it seems incredible that they should not have followed it up by a further attack.

As it was, the Japanese Navy met its first severe check in the Coral Sea action early in May, losing its newest aircraft carrier, the *Ryukaku*. That the Americans suffered a similar casualty, the 33,000-ton *Lexington*, was not made known until some time later. By then the two navies had again met off Midway Island, the result being definitely a Japanese defeat. It will be hard for the enemy to replace the four aircraft carriers sunk on this occasion, the *Akagi*, *Kaga*, *Hiryu*, and *Soryu*. It is true that the Americans lost the *Yorktown*, and have since been deprived of the *Hornet* and the *Wasp*, but their capacity for replacing lost ships rapidly is immeasurably greater than Japan's.

It should be added that both the Coral Sea and Midway actions were almost entirely confined to attacks on ships from the air, in which the torpedo played the leading part. More recent encounters in the Pacific have been between ships, and have given more scope for gunnery, but this has undoubtedly been due to the fact that both sides are short of aircraft carriers and are reluctant to risk the few that remain to them pending reinforcement.

In the Mediterranean the ebb and flow of the land fighting in Northern Africa, from Morocco to Egypt, has naturally had a considerable influence on naval operations. With the greater part of the North African coast in our hands, the Mediterranean Fleet has naturally been able to accomplish much more in the way of attacks on enemy convoys. It is not always appreciated that the swiftness of the Eighth Army's advance owed much to the support which it never failed to receive from the Navy on its right flank.

UNITED STATES.

"Unprecedented" is hardly a strong enough word to describe the tremendous expansion which the United States Navy has undergone in the past twelve months.

At the time of writing the total appropriation for the fiscal year 1942-43 is understood to be \$26,500,000,000, but this may easily prove to be an under-statement, since additional credits are voted at frequent intervals. Naval personnel has swollen to a corresponding extent, and it was officially stated on October 23 last that the total number of officers and men on duty was not less than 1,000,000. This figure, since increased to 1,286,000, did not include the Marine Corps, approximately 200,000 strong, or the Coast Guard, which had reached a total of 110,000. Enlistment of additional numbers was continuing at a steady rate, in order that the quickening rate of delivery of new warships might not be hindered by any lack of crews for them. Thus in less than a year the strength of United States naval personnel had trebled, the increase being on a scale which has never been equalled. By June 1943, naval personnel is expected to total 1,608,000.

Up to June last it was estimated that the total expenditure of the nation on defence and other commitments specifically due to the war had in the three years to that date reached the astronomical total of \$170,000,000,000.

NEW BASES

A natural corollary of all these developments has been a demand for additional bases and for training establishments of various kinds. On April 1 the Senate passed a bill which authorised the appropriation of a sum of \$1,000,000,000 for :

The establishment or development of naval shore activities by the construction of such temporary or permanent public works as the Secretary of the Navy may consider necessary.

It was added that this bill was designed generally to provide for expansion in aircraft and storage facilities, but that details could not be explained for reasons of military secrecy.

This was followed on July 30 by the Senate's adoption of a bill authorising the expenditure of \$974,634,000 "for the establishment or expansion of naval shore facilities." This bill, which was passed unanimously, contained the following specific appropriations :

- Ordnance storage facilities, \$52,000,000.
- Personnel training and housing facilities, \$26,140,000.
- Hospital and dispensary facilities, \$25,000,000.
- Shore radio facilities, \$15,000,000.
- Naval research laboratory, \$2,000,000.
- Passive defence facilities, \$25,000,000.
- Miscellaneous structures and advance bases, \$135,000,000.

In February it was announced that the naval air base on Isla Grande, Puerto Rico, had been completed at a cost of \$30,000,000. This base was built on mangrove swamps, part of which were 28 feet under water. The whole tract is now solid land, with an area of about 300 acres. It is claimed by the Navy Department to be "the most complete and modern naval air base under the American flag."

On February 5 the United States naval base at Londonderry, in Northern Ireland, was officially declared to be open. This is the first base that has ever been established by the United States Navy in the British Isles. Its facilities are shared by the Royal Navy. Captain W. J. Larson, U.S.N., placed in command of the American side of the establishment (Commodore Stewart being the senior British naval officer) stated that the operations of this base are on a more substantial scale than those carried out at the bases at Queenstown and in Lough Swilly during the last war, when more than 92 United States warships were based on Irish ports, and as many as 39 destroyers operated from there at one time. He emphasised the extent of the repair facilities at the new base, including machine tools manufactured in America and operated by United States naval personnel.

In September the Secretary of State, Mr. Cordell Hull, disclosed that the United States, with the consent of the Ecuadorian Government, had established naval bases in the Galapagos Islands. During the previous month a base for motor torpedo boats was opened at Taboga Island, 12 miles from the Pacific entrance to the Panama Canal. This is regarded as a material addition to the defences of the Canal Zone and of Panama.

A number of "lighter-than-air" bases, to accommodate the small airships unofficially known as "blimps," have been established on both the Atlantic and Pacific coasts. One of these bases was commissioned in the vicinity of Elizabeth City, New Jersey, on April 1, with ceremonies in which the principal speakers were Rear-Admiral M. H. Simons, Commandant of the Fifth Naval District; Governor Broughton, of North Carolina; and Captain C. E. Rosendahl, U.S.N., a well-known expert on lighter-than-air craft. This base was constructed at a cost of \$6,000,000. Others on the Atlantic coast are situated at Lakehurst, New Jersey; South Weymouth, Massachusetts; Perrine, Florida; Houma, Louisiana; and near Port Arthur, Texas. Those on the Pacific coast are at Sunnyvale, California, and south of Santa Ana, in the same state. A third is under construction.

Captain Rosendahl, speaking at the inauguration of the Elizabeth City base, stated that lighter-than-air craft of the "K" type were constantly on patrol over the Atlantic, and were a vital adjunct to anti-submarine warfare. On more than one occasion they had engaged Axis submarines. He considered that the stationing at the Elizabeth City base of a squadron of these craft would constitute "an effective step in combating the submarine menace."

Numerous Naval Reserve aviation bases have also been opened, to provide additional facilities for student aviators who have undergone preliminary courses at one or other of four special schools established for the purpose at universities in Georgia, North Carolina, Iowa, and California.

As far as can be gathered from published reports, there are not less than 20 of these Reserve aviation bases in the United States. In April three were begun, viz., at Memphis, Tennessee; Norman, Oklahoma;

and Peru, Indiana. Each has been provided with all facilities required for preliminary flight training, such as barracks, administrative buildings, flying field, hangars, and outlying fields. In July two more bases were started at Hutchinson, Kansas, and Ottumwa, Iowa, respectively, each capable of training 800 aviators at a time. Most of the other bases are designed to take in a quota of 2,500 students entering the expanded training programme every month. To relieve congestion, the former Naval Reserve aviation base at New York was abolished on July 1, its personnel and equipment being distributed among other bases.

Naval training centres, used as instructional stations and technical schools for recruits, have been established on the north-west side of Lake Tahoe, in California; on the eastern shore of Lake Seneca, to the north of the town of Willard, New York; at Port Deposit, Maryland; at Pend Oreille, Idaho; at Norfolk, Virginia; at San Diego, California; and at Newport, Rhode Island. Most of these appear to be designed to accommodate from 20,000 to 30,000; but the training station on the Great Lakes is bigger still, its original capacity of 46,000 having been expanded so that 60,000 recruits can be handled.

Another important new establishment on the Great Lakes is the air training base at Glenview, near Chicago, which is designed to rival the big one at Pensacola. This is the only inland air training establishment where pilots are trained to operate with aircraft carriers, the vessels in question being the U.S.S. *Sable* and *Wolverine*, described in a later paragraph.

The Groton Iron Works at Groton, Connecticut, which built steel merchant vessels in the last war, has been acquired for naval use. It has been arranged for the Electric Boat Company to undertake the operation of these additional facilities on behalf of the Navy, as an adjunct to the Company's own shipyard at Groton.

Early in June the New York Navy Yard was again extended, to take in a former stone-cutting plant alongside the East River. This fresh extension was necessary to meet the increasing demands of new construction programmes, by which the yard's output of ships had been multiplied repeatedly.

Other establishments opened during the year included an aviation maintenance school at Millington, near Memphis, Tennessee; a naval depot at Mechanicsburg, Pennsylvania, which includes 65 warehouses and other buildings, and covers an area of 800 acres; a training station for naval constructors, named after Rear-Admiral Peary of Arctic fame, situated near Williamsburg, Virginia, and able to accommodate 26,000 officers and men; and a naval supply depot at Bayonne, New Jersey.

SHIPBUILDING DEVELOPMENTS.

Practically every shipbuilding establishment in the United States, both Government and private, has undergone expansion to a greater or less degree. Docking facilities are being extended correspondingly, the expenditure of \$210,000,000 for the provision of 48 new floating dry docks having been requested by the Navy Department. This has since been embodied in a bill which has received the consent of Congress.

Every possible device to accelerate the rate of construction of warships has been adopted. Electric welding is used wherever possible, and a high degree of standardisation is employed. In the case of certain aircraft

carriers launched during the second half of 1942, various non-essentials, such as running water (hot and cold) in every cabin, which in the normal course would be looked upon as a *sine-qua-non*, have been omitted in order that the time of delivery may be advanced.

At the annual meeting of the American Society of Naval Architects and Marine Engineers, held in New York on November 13, Admiral William D. Leahy, Chief of Staff to the Commander-in-Chief (President Roosevelt), delivered a special message from the President, referring to "the splendid response the shipbuilding industry has made in the present national emergency." Continuing, he said :

"The President understands that to-day more than at any previous time our naval architects and marine engineers are called upon to devise new methods of production and to design new types of ships—large aircraft carriers, small carriers, escort vessels, landing craft and numberless other special types necessitated by new demands of this war, all of which must come off the assembly lines with a timing almost equal to our boasted pre-war mass production of motor cars."

The Admiral revealed that aircraft carriers are now being built in 17 months, whereas the best pre-war record was practically double that time. Battleships, he said, are being built in about three instead of five years as before the war, and submarines are being turned out in little over a year, whereas normally they took double that time. The construction time for modern destroyers has been reduced from 18 to six months, while a recently expanded large shipyard will soon be turning out two a month.

On June 30, 1942, no fewer than 3,230 sea-going warships were under construction for the United States Navy. In addition, there were being built in American yards 218 vessels destined for Allied navies. At the end of 1942 there were 3,205 U.S. ships in commission.

BATTLESHIPS

The last battleship of the Washington class, the Alabama, was launched on February 16, 1942, and delivered the following November. She has thus been built in the record time of 2 $\frac{3}{4}$ years, no mean achievement considering that her standard displacement is 35,000 tons. Three of her sister ships, the Indiana, Massachusetts, and South Dakota, were also completed during 1942. These four differ in some respects from the first two ships of the class, the Washington and North Carolina, being 680 feet long on the waterline instead of 704 feet, and having an extra 2-inch beam. Their engines are of 130,000 S.H.P. instead of 115,000, bringing the speed up to 30 knots. There are also slight differences in appearance.

Two of the 45,000-ton battleships of the 1940 programme, the Iowa and New Jersey, were launched in August and December, respectively. Both are to be commissioned during 1943. Work is proceeding on the remaining four ships of the class, the Missouri, Wisconsin, Illinois, and Kentucky. The former pair were laid down in 1941 and the latter pair in 1942, but it is hoped to launch them all before the end of 1943.

For the time being the construction of the five great ships of the Montana class, which were to have been of 58,000 tons displacement, has been abandoned, as it is considered that the material and labour which they would have absorbed can be better devoted to more urgent needs.

According to the latest reports, it is believed that only two out of the six battle cruisers of 27,000 tons ordered from the New York Shipbuilding

Corporation in September, 1940, are being proceeded with for the present. These are the Alaska and Guam. No confirmation is obtainable of the report that the ships of the Alaska class will be completed as aircraft carriers, though it is possible that material intended for the postponed four has been diverted to some of the aircraft carriers under construction.

AIRCRAFT CARRIERS.

During last year three of the 25,000-ton aircraft carriers of the Essex class were launched: the Essex herself in July, the Lexington (ex-Cabot) in September, and the Bunker Hill in December. From launch photographs these ships appear to be enlarged Hornets. All three may be expected to go into service in 1943; and eight more should be launched during that year, the Yorktown (ex-Bonhomme Richard), Intrepid, Kearsarge, Franklin, Hancock, Randolph, Wasp (ex-Oriskany), and Ticonderoga. Two more ships of this class are believed to have been begun, though their names have not been published. It is possible they will be called Cabot and Oriskany.

Additional tonnage authorisations have been approved, equivalent to about 20 more ships of the Essex type; while at least eight of the 10,000-ton cruisers of the Cleveland class have been converted into aircraft carriers in order to put the maximum number of carriers into service at the earliest possible date. Former names of these converted ships have not been officially disclosed, but are suspected to include the formerly named Amsterdam, Tallahassee, New Haven, Huntington, Dayton, Wilmington, Buffalo, and Newark. Three were launched in 1942, the Independence, Princeton, and Belleau Wood, while four others are known to have been named Cowpens, Monterey, San Jacinto, and Langley.

Until some of the above vessels are completed, the United States Navy is able to dispose of only three first-line carriers, the Enterprise, Ranger, and Saratoga. There are, however, a considerable number of aircraft carriers of an auxiliary type in service, rated officially as aircraft escort vessels. Names that have so far been published include the Altamaha, Barnes, Block Island, Bogue, Card, Charger, Copahée, Croatan, Glacier, Hamlin, Long Island, and Nassau. All were converted from mercantile hulls under construction. Judging from the photographs received of the Charger and Copahée, most of them have an island superstructure on the starboard side forward instead of a completely clear deck as in the case of the first ship delivered, the Long Island.

Averaging 17,600 tons standard displacement, with oil engines of the Busch-Sulzer type, giving a designed speed of 16·5 knots, these ships have been found most valuable for convoy work. They are armed with numerous light anti-aircraft weapons and machine guns, and can accommodate 30 fighters, or a smaller number of bombers or torpedo planes. Their equipment includes derricks for retrieving seaplanes from the water.

CRUISERS.

Under the 1942 programme of naval construction, 500,000 tons of cruisers, both heavy and light, have been authorized. They will include, it is understood, two to be named Pittsburgh and St. Paul.

Of the eight 13,000-ton cruisers of the Baltimore class, mounting nine 8-inch guns as their main armament, two, the Baltimore and Boston,

went afloat last year. Two of the others have been renamed in commemoration of ships lost in the Solomon Islands operations, the Pittsburgh having become the Canberra and the St. Paul being altered to Quincy. It will be recalled that the Australian cruiser Canberra was lost on the same occasion as the previous Quincy, in August last.

Apart from those transformed into aircraft carriers, as described above, six cruisers of the 10,000-ton Cleveland class, armed with twelve 6-inch guns, were launched in 1942, these being the Denver, Montpelier, Santa Fe, Birmingham, Mobile, and Miami. Three of the others, the former Flint, Vicksburg, and Wilkes-Barre, have been renamed Vincennes, Houston, and Astoria, respectively, after ships sunk in the south-west Pacific and Dutch Indies. Both the Denver and Montpelier, together with the Cleveland and Columbia, launched in 1941, went into service last year. This left under construction and unlaunched at the end of 1942, apart from those understood to be completing as aircraft carriers, 20 cruisers of this class.

A fifth ship of the Atlanta class, the 6,000-ton Oakland, was launched last October and completed two months later. Three more are under construction, the Spokane, Tucson, and Reno.

DESTROYERS.

Destroyers are being turned out so rapidly that it is not easy to keep pace with developments. So far as can be ascertained, the total number launched last year cannot have been short of 100, all of either the 1,700-ton Bristol type or the 2,100-ton Fletcher class. Two of them, the Barton and Laffey of the Bristol type, were completed and in action so soon that they were amongst the seven sunk in the hard-fought action off Guadalcanal on November 13-15.

A great many more destroyers have been laid down, over 200 of which belong to a new "escort" type of 1,300 tons, understood to be generally similar to the later vessels of the British "Hunt" class. Most of them are named either after destroyers lost in 1941-42 or in honour of officers and men killed in action during the same period. These ships are being built very rapidly, several having been launched and some even completed last year.

SUBMARINES.

Not only have the majority of the original 73 submarines of the "Gato" class been completed, but one has been reported lost in service. Over 120 more have since been ordered, several of which have been launched. This augurs ill for the Japanese, who are already reckoned to have lost one-fourth of their shipping, no small part of this loss being due to the operations of U.S. submarines in the Far East and Pacific during the past year. These operations, moreover, have been carried out with remarkably few submarine casualties, suggesting that Japan has not advanced so far in her anti-submarine methods as in some other directions.

OTHER SHIPS.

The second and third minelayers of the "Terror" class, the Catskill and Ozark, were both launched during 1942, and are now doubtless in service. Three merchant vessels purchased in 1941, the Cavalier, Quaker and Yale, have been converted into coastal minelayers, and now bear the

respective names of Monadnock, Miantonomoh and Wassuc. New mine-sweepers continue to be turned out in large numbers, there being 43 of the 700-ton "Raven" class, 18 or more of the "Adroit" class, over 200 of the numerical (YMS) type and 70 of the "Accentor" class, besides a great many more which have been ordered without details being disclosed. Still more numerous are the light coastal craft, such as motor torpedo boats and submarine chasers (which in this country would be described as motor gunboats and motor launches). The 1942 programme included 400 steel submarine-chasers and 200 of the wooden type. To distinguish between these, the steel vessels are now numbered with the prefix PC and the wooden ones with the letters SC.

Naval activity on the Great Lakes has already been referred to in connection with training. Two large paddle-wheel passenger steamers, the Greater Buffalo, of 7,739 tons gross, and the Seeandbee, of 6,881 tons gross, have been taken over by the Navy and converted into training aircraft carriers with the respective names of Sable and Wolverine. They are the first aircraft carriers ever to operate on the Great Lakes and also the first to have paddle-wheel propulsion.

A number of aircraft transports of an improved type, capable of being used as auxiliary cruisers, are under construction. The first of these is named Alazon Bay.

Two turbine merchant ships, the Seatrain Havana and Seatrain New York, have been acquired for use as aircraft transports, named Hammondsport and Kittyhawk respectively. Other mercantile acquisitions in the past year include oilers, transports, store and cargo ships in quite considerable numbers, besides yachts for auxiliary patrol duties. Ten of the largest yachts taken over, ranging from 1,100 to 3,000 tons gross, have been rated as gunboats; about 40 are engaged on coastal patrol duties; and the remainder come under the head of district craft. Four ex-mine-sweepers of 1,060 tons formerly in the Coast and Geodetic Survey service have been fitted out as salvage vessels. Many more fleet tugs of the diesel-electric type have been launched.

NAVAL AIR SERVICE.

In February, 1942, the Navy's authorised complement of aircraft was increased from 15,000 to 22,000.

On September 29 President Roosevelt asked Congress to appropriate a sum of \$2,862,000,000 for naval aircraft. No indication was given of the numbers or types that would be covered by this appropriation.

Earlier in the year Rear-Admiral Arthur B. Cook was appointed Chief of Air Operational Training, with headquarters at the Naval Air Station, Jacksonville, Florida.

Rear-Admiral J. H. Towers, Assistant Chief of Naval Operations (Air), has been placed in charge of the Naval Air Transport Service.

PERSONNEL.

Membership of the General Board of the Navy was reconstituted in 1942, with Admiral Arthur J. Hepburn (retired) as chairman. Admiral Hepburn had previously been Director of Public Relations as from May, 1941. Membership of the Board was otherwise composed of Admiral Thomas C. Hart (retired); Admiral Claude C. Bloch (retired); Rear-

Admiral Walton R. Sexton (retired) ; Rear-Admiral Gilbert J. Rowcliff ; Captain Harry L. Pence, U.S.N. (retired), and Captain John J. Mahoney, U.S.N. (retired), the last-named acting as secretary.

The duties and responsibilities of the Board have increased greatly since America's entry into the war. The above reorganisation has added to the Board a group of outstanding naval officers well qualified through long experience to deal with the problems constantly arising through the stress of hostilities. Admirals Hepburn and Bloch are former Commanders-in-Chief of the United States Fleet, and Admiral Hart was Commander-in-Chief of the Asiatic Fleet for the first two months of the war.

It should be borne in mind that the General Board has no administrative functions. The need for an expert body to advise the Secretary of the Navy was first recognised during the war with Spain, when the Secretary at the time, Mr. John D. Long, created "The Naval Board of 1898". This temporary board was succeeded by the present permanent organisation on March 18, 1900, with Admiral George Dewey as its head. Since that date many noted naval officers have served on the board. Its duties are to study and make recommendations in regard to naval policy, covering a wide range of subjects, including the number, type and design of vessels and aircraft, after consideration of all the available information bearing thereon. It keeps itself informed on the developing science of warfare, with a view to recommending such changes in the size and constitution of the fleet and of its component parts as may be necessitated by changing conditions. In formulating its recommendations, the board makes exhaustive studies of data submitted by technical bureaus, by the fleet and other competent sources, and also holds hearings as required.

On July 24 Admiral William D. Leahy (retired) became Chief of Staff to the Commander-in-Chief (President Roosevelt). Some weeks earlier another newly-created office was filled by the appointment of Rear-Admiral C. P. Snyder as Naval Inspector-General at the headquarters of the Commander-in-Chief, U.S. Fleet, and Chief of Naval Operations (Admiral E. J. King). The Inspection Board for Naval Districts, formerly headed by Rear-Admiral Snyder, has been merged in his new office.

Two other fresh appointments at Washington are those of Rear-Admiral Harold C. Train to be Director of Naval Intelligence, in succession to Rear-Admiral T. S. Wilkinson ; and of Captain Leland P. Lovette, U.S.N., to be Director of Public Relations in succession to Admiral Hepburn. Captain Lovette is well known as a writer on naval subjects, and particularly as the author of "Naval Traditions, Customs and Usage", published by the United States Naval Institute in 1934.

Rear-Admiral William A. Glassford, who held the temporary rank of Vice-Admiral while serving in command of U.S. Naval Forces in the South-West Pacific, was recalled to shore duty in May. Thenceforward the South-West Pacific Command was held by Vice-Admiral Robert L. Ghormley until he was relieved by Vice-Admiral (now Admiral) William F. Halsey. Though this change in command was announced by the Navy Department on October 26, it is understood to have been effected somewhat earlier. At the same time Vice-Admiral Herbert Fairfax Leary was appointed to succeed Vice-Admiral W. S. Pye in command of a special task force.

In May the formation of a South-East Pacific Command became known with the announcement that Rear-Admiral John F. Shafroth had been selected for this appointment, which is subordinate to the Commander-in-Chief of the U.S. Pacific Fleet.

JAPAN.

Though Japan has so far lost only a single capital ship in this war, her other losses have not been light. Reference is made earlier in this chapter to the number of aircraft carriers destroyed; while in cruisers and destroyers, even allowing for some exaggeration in the published reports, a decided shortage must exist.

BATTLESHIPS.

There is no evidence of any new battleships having been delivered during 1942, though according to Japanese statements the completion of four is expected in 1943. Nor is any more known about their characteristics or their names, unless one attaches importance to a Chinese suggestion that two will be called Aki and Satuma. Like Kii, Owari and Tosa, also reported on slender foundation, these are former battleship names. Two battleships launched in Japan in 1906-7 and scrapped at the end of last war were named Aki and Satuma; and Kii, Owari and Tosa were the names of three which had been laid down at the time of the Washington Conference of 1921, and were cancelled in conformity with the Naval Treaty of 1922.

Whether or not the names Takamatu and Titibu are those of vessels of the "pocket battleship" type, there is some ground for suspecting that a third name reported through American channels, Niitaka, belongs to the same class. It is the Japanese name of Mount Morrison, in Formosa (Taiwan); and it will be recalled that the battleships of the "Kongo" class—originally built as battle cruisers—were named after mountains.

AIRCRAFT CARRIERS.

Another American report is that an immense Japanese aircraft carrier (described as looking bigger than the Saratoga) has been sighted to the north of the Solomon Islands. From this it is argued that one of the big new battleships so long under construction may have been converted into an aircraft carrier. Be this as it may, the enemy does not appear to have made very effective use of her as yet.

A third ship of the "Syokaku" class, the Ryukaku, was completed just in time to take part in the Coral Sea action, in which she was destroyed. On the same occasion the Syokaku was set on fire and badly damaged, and there is ground for suspecting that the Ryuzyo, of 7,100 tons, smallest of Japanese carriers, may since have been eliminated. A similar report concerning the 7,400-ton Hosyo lacks confirmation, and may relate to the same ship.

It is believed that the nebulous third ship of the Soryu class, said to have been named Koryu, was never built, the Syokaku having been laid down in her stead.

CRUISERS AND DESTROYERS.

Up to the end of 1942 it would appear that no fewer than 28 out of Japan's pre-war strength of 35 cruisers had been sunk. It may be assumed that some of the ships so described must have been minelayers, big destroyers, or training vessels of the "Katori" type. Even so, there seems no doubt that the losses inflicted have been very serious, exceeding the possibility of replacement.

In the same period 51 destroyers are believed to have been disposed of, though here again allowances must be made for some of them having been minesweepers or large torpedo boats. Moreover, the annual output of Japanese shipyards is believed to amount to fully 20 destroyers, so the question of replacement is not such a difficult one.

When war began there were at least 120 destroyers and seagoing torpedo boats in service, so there must still be a considerable number left. One of the great difficulties in assessing Japanese losses is that names of ships sunk are so seldom ascertainable. Up to the date of going to press, the only destroyer names reported as lost—and some of these are distinctly doubtful—are Hamakaze, Arasi, Osio, Uranami and Hato.

SUBMARINES.

Though occasional reports of Japanese submarine activity in the Indian Ocean and Pacific have been received, the results do not come anywhere near those obtained by U-boats in the Atlantic. If, as supposed, Japan began the war with about 100 submarines, and has built 20 to 25 since, their achievements have hardly been commensurate with their numbers. One of their main handicaps is undoubtedly the great distance between Japan and their most promising areas of operation.

A photograph of one of the largest Japanese submarines—probably of the "I.15" class—was published in a German periodical after her arrival in an enemy port in Europe. Having been "faked", this picture reveals little of interest. There are at least ten vessels of this type, displacing 2,180 tons, and with a surface speed of 20 knots. A seaplane is believed to be included in the equipment, one having been used for reconnaissance purposes off the East Coast of Australia.

Nothing more has been accomplished by submarines of the midget type, which must be considered a failure for practical purposes. It has been stated that some of these tiny craft have a displacement—it is presumed in submerged condition—of 87 tons.

MISCELLANEOUS.

Two first class minelayers completed shortly before the war are the Aotaka and Hatutaka, both built by the Harima Shipbuilding Company. A French source gives the dates of their launching as June, 1940 and April, 1939, respectively. They are believed to be enlarged editions of the Yaeyama, of 1,135 tons, which has a speed of 20 knots.

Additional units of the 720-ton "Sokuten" class have also been commissioned, bringing the number of these second class minelayers up to about two dozen.

More auxiliary seaplane carriers have been extemporised from large liners, names reported including Fujikawa Maru, Kasuga Maru, Kenyo Maru, Kiyokawa Maru, Awata Maru, Kamakura Maru and Tatuta Maru. Some of these may prove merely to have been used as aircraft transports.

From the official account of the highly creditable action in which H.M.I.S. Bengal and the Dutch tanker Ondina, which she was escorting, defeated two more heavily armed raiders which attacked them, it is clear that Japan is employing armed merchant cruisers to eke out her strung-out naval forces. The two in question were the Kunikawa Maru, 6,863 tons gross, and Kikoku Maru, about 10,000 tons, the latter of which was sunk.

Each is described as being armed with six 5·5-inch guns and torpedo tubes, and equipped with a couple of seaplanes. The encounter occurred about 1,000 miles to the south-west of Java.

FRANCE.

Though the French warships in North and West African ports, as a result of the landing of Allied forces in Algeria and Morocco last November, have now placed themselves at the disposal of the Allies, a number of them are in need of refit before they can go into service.

In resisting the Allied landings on November 8 last the battleship *Jean Bart* was put out of action and the cruiser *Primauguet* was so badly damaged that it is not clear whether she will again be fit for service. Four destroyers and eight submarines became total losses, but a number of vessels of both these categories were merely damaged and will be refitted.

An important part of the French fleet lies scuttled or disabled at Toulon, the ships having been wrecked by their officers and men last November in order that they might not pass intact into German hands. The battleships *Dunkerque*, *Strasbourg* and *Provence*, the cruisers *Algérie*, *Colbert*, *Foch*, *Dupleix*, *Jean de Vienne*, *La Galissonnière* and *Marseillaise*, the seaplane carrier *Commandant Teste*, and a considerable number of destroyers, submarines and other vessels were included in this gigantic and commendable act of sacrifice.

It is now known that the following were amongst the ships scuttled to avoid falling into German hands in Western French ports in June, 1940: the submarine *Pasteur*, the sloop *Beautemps-Beaupré*, the patrol vessels *Etourdi* and *Enseigne Henry*, the motor torpedo boats VTB 13 and 14, the submarine chasers CH 16, 44, 45 and 46, and the oilers *Dordogne* and *Le Loing*.

Rear-Admiral Auphan, who was first appointed Secretary of the Marine Ministry under Admiral of the Fleet Darlan in the early part of last year, was dismissed in November and replaced by Vice-Admiral Jean Abrial.

ITALY.

Though progress with Italian naval construction continues to be slow, steel shortage being the main difficulty, it is claimed that the battleships *Impero* and *Roma*, of 35,000 tons, were both completed during the second half of 1942. Even though the wrecked *Conte di Cavour* has been salvaged from Taranto Harbour, it is not believed that she has been made fit for service again. A ship of this type reported under refit at Trieste may be either the *Cavour* or her sister ship, the *Giulio Cesare*.

A few of the fast cruisers of the "Regolo" class, of 3,362 tons, are suspected to have been commissioned, but there is no news of the two 8,000-ton ships of the "Ciano" class or of the two smaller cruisers that were laid down at Trieste for the Siamese Navy.

A destroyer named *Premuda* was in action in the Mediterranean in June, 1942, according to an official Italian communiqué. At first this was supposed to be one of the eight destroyers ordered under the 1939 programme, but it now appears that she is the Yugoslav flotilla leader *Dubrovnik*, which the Italian Navy has taken over and renamed.

Italian submarines continue to be destroyed at fairly frequent intervals, as attested by the fact that official admissions of losses in 1942 numbered

at least 20. One of the casualties was the new submarine Cobalto, destroyed by H.M.S. Ithuriel and Pathfinder in the Mediterranean on August 12 last. She had not long been laid down when Italy entered the war in 1940.

A petrol carrier wearing the Italian naval flag, which was sunk by one of H.M. submarines in the Central Mediterranean in November, was probably the Stige, of 1,343 tons, built in 1924.

Two 10,000-ton cruisers torpedoed and believed sunk by H.M. submarines Urge and Umbra in April and June, 1942, respectively, have not been identified.

GERMANY.

Apart from the U-boat campaign, the German Navy's activities in 1942 were chiefly confined to unsuccessful attacks on British convoys bound for North Russia. Inability to stop these convoys had not a little to do with German military disasters on the Eastern Front last winter; and after the repulse suffered by the enemy off Bear Island at the hands of Captain R. St. V. Sherbrooke, V.C., R.N., on December 31, a scapegoat was evidently demanded. Hence the supersession of Gross-admiral Raeder by one of his subordinates shortly afterwards. The former's dismissal may well be compared with the retirement of Tirpitz in March, 1916, though the circumstances differed. Both Tirpitz and Raeder had been long in office and had important achievements to their credit.

At the end of 1942 the huge battleship Tirpitz was lying at Trondheim, together with the armoured ships Admiral Scheer and Lützow and the heavy cruiser Admiral Hipper. In the Baltic were the battleships Scharnhorst and Gneisenau, the latter still under repair, and the aircraft carrier Graf Zeppelin. It would seem that the last-named ship is regarded as a failure, or else her trials must have given evidence of serious defects in her construction, for there has been no attempt to use her for any offensive purpose. Nor is there any news of her sister ship—understood to have been named Peter Strasser—having been completed.

Though in France it has been asserted that the four German cruisers of over 7,000 tons begun in 1939 have passed into service, they have not yet been sighted at sea so far as published information goes.

U-boats which have been destroyed are reported to include U 12, U 14, U 15, U 16, U 18, U 19, U 25, U 27, U 28, U 31, U 32, U 33, U 35, U 36, U 38, U 39, U 41, U 42, U 43, U 44, U 64, U 85, U 103, U 104, U 105, U 106, U 107, U 108, U 109 and U 110, in addition to the list given in last year's issue of this annual. The majority of these numbers have come from neutral sources. According to the latest information available in this country, the rate of destruction of U-boats has recently increased.

Light coastal craft corresponding to our motor gunboats and motor torpedo boats, and classed by the enemy as *schnellboote*, have been roughly handled on several occasions by our own light forces in the Channel and North Sea during the past year. Eight have been sunk, and at least one is known to have fallen into our hands more or less intact.

German surface raiders have been less prominent during 1942, though one was scuttled to avoid capture by the United States Navy in the South Atlantic, according to an American announcement in January, 1943.

U.S.S.R.

Though the Soviet Navy has been in frequent contact with the enemy in the Barents Sea, and somewhat less often in the Black Sea, details of these encounters are regrettably scanty. Sundry German destroyers, torpedo boats, submarines and transports have been reported sunk during these engagements.

On the other hand, the enemy claim to have accounted for a variety of Soviet warships, including the *Krasni Krim*, said to have been sunk off Sevastopol in June, 1942; but there is no confirmation that this cruiser has been lost. Names of destroyers and torpedo boats alleged by the Germans to have been disposed of include the *Beshumni*, *Bistri*, *Serediti*, *Smyeli*, *Gnievni*, *Lenin* and *Tucha*. With the exception of the two last, these are all new destroyers of about 1,600 tons.

Names of new Russian cruisers of the "*Kirov*" class, according to Swedish accounts, include the *Molotov* and *Voroshilov* in the Black Sea and the *Zhelesniakov* and two others uncompleted in the Baltic. From the same source it is definitely confirmed that the 10,000-ton German cruiser which was originally to have been named *Lützow* was completed in 1940 and handed over to the Soviet Navy, who renamed her *Petropavlovsk*. It is reported that two of the four destroyers demolished at Nikolaiev in August, 1941, so that their half-constructed hulls might not be utilised by the enemy, were the *Erivan* and *Kiev*.

OTHER EUROPEAN COUNTRIES.

DENMARK.

Both the 710-ton destroyers building at the Royal Dockyard, Copenhagen, have been launched, the names conferred on them being *Najaden* and *Nymfen*. A couple of mining tenders of 260 tons and ten motor minesweepers of 74 tons have also been added to the Danish fleet.

GREECE.

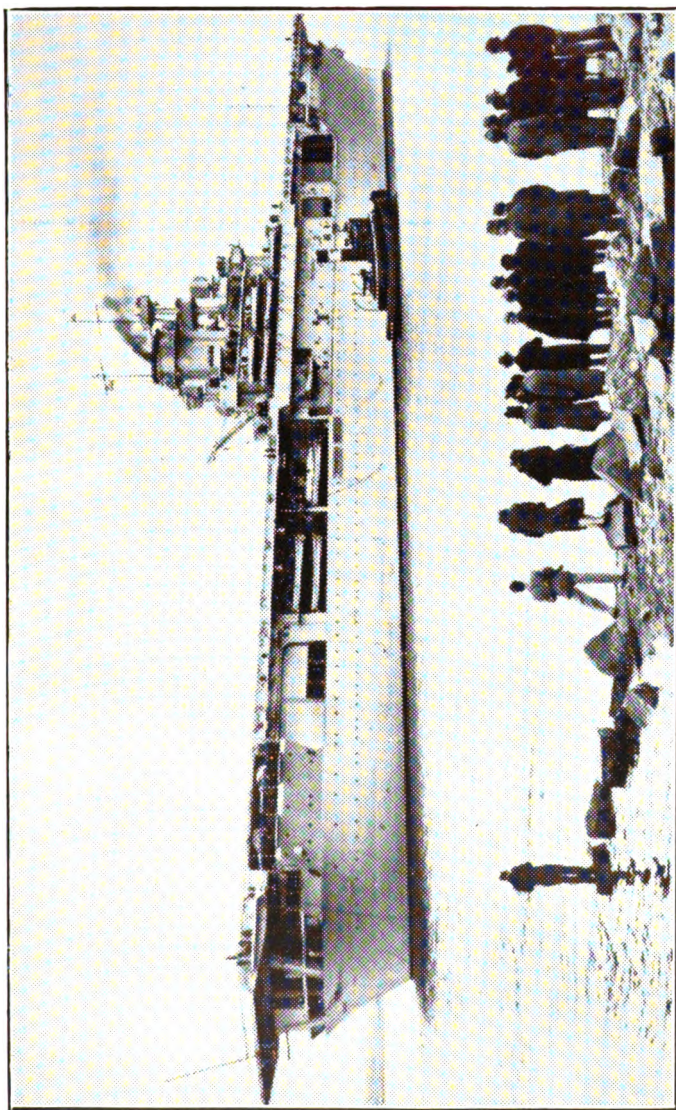
Four destroyers transferred from the Royal Navy to the Royal Hellenic Navy have been named *Pindos* (ex-H.M.S. *Bolebroke*), *Adrias* (ex-*Border*), *Kanaris* (ex-*Hatherleigh*) and *Miaoulis* (ex-*Modbury*). Two more that are to be acquired will be named *Nearchos* and *Themistocles*.

Four corvettes are being acquired from the same source, the first being the *Sachtouris* (ex-H.M.S. *Peony*). Others are to be the *Apostolis*, *Kriezis* and *Tombazis*.

On December 11, 1942, it was announced that the submarine *Triton* had been sunk.

NETHERLANDS.

Two destroyers built on the Clyde, the *Jan van Galen* (ex-H.M.S. *Noble*) and *Tjerk Hiddes* (ex-H.M.S. *Nonpareil*) were acquired in 1942, following the loss in November of the *Isaac Sweers*, the last destroyer remaining to the Royal Netherlands Navy. Launched at Flushing in March, 1940, the *Isaac Sweers* was brought away to this country in an incomplete condition two months later. In her short career she has done excellent service, notably when she was one of the division of four destroyers under Captain



U.S.S. Wasp.



H.M. The King inspecting an American battleship at a British Naval base, June, 1942.

G. H. Stokes, R.N., which sank two Italian cruisers off Cape Bon in a brilliant night action on December 13, 1941.

A motor submarine chaser presented by the United States Navy in August, 1942, has been named Koningin Wilhelmina. She was previously the U.S.S. PC 468.

NORWAY.

British warships taken over and manned by the Royal Norwegian Navy include the destroyers Eskdale, Glaisdale, Lincoln and St. Albans, and the corvettes Acanthus, Eglantine, Potentilla and Rose. From the fact that they have not been given names, it seems possible that they have been lent for the duration of the war. Two submarines, the Uredd (since lost) and Ula, have also hoisted the Norwegian flag. The former name means Fearless; the latter is that of a village on Oslo Fjord, from which came the navigator Ulabrand.

A motor submarine chaser acquired from the United States has been named King Haakon VII. She was previously the U.S.S. PC. 467.

POLAND.

The Polish Navy has been reinforced by a cruiser, H.M.S. Dragon, which will be given another name in due course. Other acquisitions are the destroyers Orkan (ex-H.M.S. Myrmidon), Slazak (ex-H.M.S. Bedale) and the submarine Dzik (Boar).

Losses last year included the destroyer Kujawiak (ex-H.M.S. Oakley).

PORTUGAL.

Portugal has completed her first home-built oiler, the São Braz, and has ordered a sister ship. Six motor fishery protection vessels of 250 tons recently completed at Lisbon have been named Azevia, Bicerda, Corvina, Dourada, Espadilha and Tataga.

ROUMANIA.

Sundry Roumanian warships have been lost in conflict with the Soviet Black Sea fleet and air forces. They are believed to include the destroyer Marasesti, the gunboat Locotenent Lepri Remus, and the motor torpedo boats Viforul and Vijelia. It is possible that the destroyer Regele Ferdinand has also been sunk.

SPAIN.

Three cruisers, the Galicia, Almirante Cervera and Miguel de Cervantes, of 7,475 tons, are in process of reconstruction. Their eight 6-inch guns have been rearranged in four double turrets, two forward and two aft, of which "B" and "X" are superfiring. A catapult has taken the place of the former turret amidships. Six of the 12 torpedo tubes have been removed, and the anti-aircraft armament has been augmented, now comprising 12 guns of 3.5-inch calibre and 16 of 37 mm. All these guns are mounted in pairs.

When these three ships are finished with, the cruiser Mendez Nuñez, of 4,509 tons, will be taken in hand for similar rearrangement of her armament, which at present comprises six 6-inch and ten 37 mm. guns.

Two destroyers of about 1,700 tons, the Alava and Liniers, were laid down at Cartagena in 1936, but their construction was held up by the

Civil War, and was not resumed until 1939. It was again stopped a year later, in order that fresh designs might be considered, and up to 1942 no news had been received of any further new construction having been put in hand.

SWEDEN.

No country outside the belligerent nations is busier with naval construction than Sweden. Good progress is being made with the new 7,000-ton cruisers Göta Lejon and Tre Kronor, and it is proposed to modify the design of the Gotland, completed in 1934, so that she may serve as an anti-aircraft cruiser instead of as a cruiser and aircraft carrier combined.

A minelayer of 3,350 tons was laid down at Göteborg in October, 1942, and was launched three months later under the name of Elvsnabben. Particulars of her design will be awaited with interest.

Two new destroyers of 1,145 tons, the Sundsvall and Visby, were launched last year, and two sister ships, the Hälsingborg and Kalmar, are building. In addition, two of a new type, displacing 1,800 tons, to be named Öland and Upland, were laid down in 1942.

Two of the destroyers sunk by an accidental explosion in September, 1941, the Göteborg and Klas Horn, were salvaged and refitted; but the third victim of the catastrophe, the Klas Uggla, was found to be beyond repair, and her wreck has been scrapped.

During the year the torpedo boats (or small destroyers) Magne, Mode, Mjölner and Munin, of 635 tons, were completed, together with a number of 28-ton motor torpedo boats. The submarines Neptun, Najaden and Näcken were launched for early completion, and two small oilers of 717 and 585 tons respectively were acquired. A new sail training ship is projected. The submarine Sjöbörren was lost by collision in September.

No surprise will be felt when it is added that the Swedish Navy Estimates have increased from just under 50,000,000 kronor in 1938 to nearly 200,000,000 kronor in 1942.

TURKEY.

A Turkish submarine, the Atilay, was lost during exercises off Canakkale, in the Dardanelles, in July last. Another submarine, the minelaying Batiray, of 1,044 tons, has never been delivered by the Krupp-Germania shipyard at Kiel, where she was launched in March, 1939, and it is clear that she has been requisitioned by the Germans.

YUGOSLAVIA.

Though the submarine Nebojsa is understood to be operating with Allied Naval Forces, she was, with the exception of the motor torpedo boat Velebit (since lost), the only unit to escape from the Adriatic when Yugoslav resistance was overcome. The majority of the surviving ships appear to have been incorporated with the Italian Navy, though two small submarines that were building at Kiel have been appropriated by the Germans.

SOUTH AMERICAN REPUBLIC.

ARGENTINE.

Under an arrangement made with the Spanish Government in September, 1942, a destroyer of the Churruca type is to be acquired to replace the Corrientes, lost in 1941.

A number of laid-up German and Italian merchant vessels have been taken over by the Argentine Government. Some of these may be used as transports or fleet auxiliaries.

BRAZIL.

All three destroyers of the "Marcilio Dias" class are now in service, but none of the six of the "Acre" class, laid down at Rio in 1940, had been launched up to the end of 1942.

Six large trawlers laid down in 1941 at the Ilha Vianna shipyard, Rio, for the Royal Navy were transferred to the Brazilian flag on that country's adhesion to the Allied cause last year. Originally named Pampano, Pargo, Papaterra, Parati, Paru and Pelegrime, they are now the Brazilian corvettes (*corvetas*) Barreto Menezes, Filipe Camarão, Fernandes Vieira, Henrique Dias, Matias de Albuquerque, and Vidal de Negreiros.

Eight motor submarine chasers, acquired from the United States Navy have been named: Guapore, Gurupi, Jaguaru, Jaguaribe, Jovari, Jurua, Juruena, and Jutai.

CHILE.

The cruiser Chacabuco, of 3,437 tons, has been rearmed and partly modernised. She now mounts six 6-inch guns as her main armament in place of two 6-inch and ten 4.7-inch, and has had a pair of depth charge throwers added to her equipment. A new bridge has been fitted, with better accommodation, echo sounding gear and a gyro-compass.

Though launched at Elswick in 1898, the Chacabuco was not acquired by Chile until February, 1902. Her construction was undertaken by Sir W. G. Armstrong, Whitworth & Co. Ltd. as a speculation. When war broke out between the United States and Spain, in 1898, two slightly smaller ships built at Elswick for Brazil, the Amazonas and Almirante Abreu, were purchased by the former combatant and renamed New Orleans and Albany respectively. It was evidently hoped that the third ship might also hoist the Stars and Stripes, as she was given the provisional name Fourth of July by her builders.

Another prospective buyer at this time was Japan, which actually did possess a sister ship, the Takasago, launched on the Tyne in 1897 and sunk by a Russian mine in the Strait of Pe-chih-li on December 12, 1904. Both cruisers originally mounted two 8-inch guns as their main armament.

The Chacabuco was so named after the famous battle in which the army under the joint command of General San Martin, the Argentine Liberator, and General O'Higgins, first Head of the Chilean State, finally defeated the Spaniards in South America and so secured Chile's independence.

ASIA.

SIAM.

It is reported that the coast defence ship Dhonburi, driven ashore in action against a French squadron early in 1941, has been taken to a Japanese shipyard for refit.

FRANCIS MCMURTRIE.

CHAPTER III.

THE WAR ON SHIPPING AND SUPPLIES.

EARLY in the war, the German air pilots dropped leaflets on towns and villages of the British Isles claiming that "Britain's losing the Battle of the Atlantic means Britain's losing the war." It has been only gradually realised in this country, however, that the issue of the war has depended from the first on well manned merchant ships, sailing under the protection of the Royal Navy. The stark fact is that if the Government had not had at its disposal when the struggle opened, large and efficient fleets of cargo vessels and oil tankers, as well as liners for use as transports, the Axis Powers would have achieved an early victory. The manner in which Britain's overworked ships, only 6,700 of them, including tramp as well as liners, tankers and small coasters, have stood the wear and tear of the past three and a half years, to the credit of the craftsmen in shipyards and engine shops, will form a story of skill and endurance without parallel in the history of this country when it can be told without injury to national interests.

The Axis Powers recognised even before the war opened the weak spot in the armour of our over-populated little island, dependent on overseas shipments for half the food of 47,000,000 people, as well as for most of their raw materials. The eyes of the rest of the world were fixed, however, on the intermittent fighting on land—on the Continent of Europe, in Africa and in the Far East. Probably the awakening to the realities of the war situation was due to the dramatic successes of the Japanese in the Far East, which were the fruits of seapower, the effective use of ships, both of war and commerce, and of aeroplanes.

During these months of alarms and excursions on land, little was heard of the unceasing Battle of the Seas, which was being waged by day and by night without respite, in order that the essential sea communications of the United Nations might be kept open. So that the enemy might not gain information which might be of use to him, no official particulars of the tonnage sunk or of the casualties suffered by merchant officers and men have been published until July 1941. The policy of secrecy reacted unfavourably on the attitude of the average man towards the most important aspect of the world conflict and nowhere was the effect as great as in the British Isles, where the gravity of the situation was not realised. As the year 1942 drew to its close, the Prime Minister was, however, moved to give a warning: "Remember that the U-boat warfare is not diminishing, but growing, and that it may well be worse before it is better."

The tragedian of established reputation always longs to show the world his powers as a comedian and the actor who has made his mark as a funny man is convinced that he could succeed in tragic parts. So in this island country, most small boys play *not* at sailors, but at soldiers, though in these days many of them are attracted by the career of air pilot. The boy is father of the man, and responsible British Ministers usually think of war in terms of land operations, though a little consideration would show them that ships are the first essentials for an island people. But politicians, though they have their uses, do not place first things first; because a Continental power has a great army, which is its main defence,

they assume that an army is also the primary need of this country, ignoring the fact that any military force of an insular State has to be carried in ships to the selected theatre of war and must be protected while on passage by men-of-war, as well as in these days by aircraft, and must, furthermore, be kept supplied by sea with reinforcements, munitions, stores and food after it has been landed. Thus it comes about that the the opening of every war, the thoughts of British Ministers turn first to the equipment of an army and only later do they consider how that army can be transported overseas.

SHIPPING IN THE WAR OF 1914 AND AFTER.

In the First World War, enemy U-boats sank British merchant shipping of 7,750,000 tons, with the loss of 14,000 seamen, and, owing to the neglect of shipbuilding, there was a deficiency of 18 per cent. of tonnage under the British flag when the Armistice was signed in 1918. The historian realised that if the enemy could have destroyed rather more tonnage than he did in fact destroy, this country would have lost the war.

It has been declared that history is the record of exploded ideas. That may be true. It is certainly the fact that Ministers in this country learn little or nothing from the records of former wars. The lessons of the struggle of 1914-18 were set forth in a series of official histories, the last of which was not complete when the present war opened. The outstanding moral drawn, by informed observers from the first World War as from all earlier international wars, was that the issue depended ultimately on ships and seamen—that the sea controls the land. That is the doctrine which was laid down by Sir Walter Raleigh to the chagrin of the Elizabethan soldiers and in succeeding centuries its truth was exemplified time and again in the history of this country.

The official historians of the first World War emphasised the same doctrine, even though wood had given place to steel and sail to steam. The weapons of war had changed, but not its strategical principles, which rest largely on geographical conditions. About three-quarters of the earth's surface is covered with water, and the sea is the highway between nation and nation. No country is independent of sea supplies, even when under the restrictions of war. In summing up the record of the war of 1914-18, the author of "Seaborne Trade" (official history) declared:—

"In the first place, the course of the war emphasised beyond all precedent, and beyond all general expectation, the importance of maritime communications. The dependence of Great Britain on overseas supplies was an accepted axiom; but the extent to which that dependence was shared, at any rate under war conditions, by other nations had hardly been sufficiently appreciated. That dependence was, however, the inevitable result of the economic developments of the century preceding the war, the increasing importance to industrial countries of raw materials and fuel and the increasing tendency of such countries to rely on foreign sources to supplement their own production of foodstuffs.

"In Germany, where the process of industrialisation had been very rapid during recent years, it had been accompanied by an intensification of agricultural development, and agricultural development was based on large oversea supplies of artificial fertilisers and concentrated feeding stuffs. Indeed, the extent to which the European food production depended on imported fodder and fertilisers was one of the lessons most clearly brought out by the war.

"For all the belligerents alike this dependence on overseas supplies was greatly accentuated by the character of the war itself. The development of naval and military material and the direct demands of the fighting services on the products of industry exceeded anything that had been known or anticipated and those demands increased, both directly and indirectly, the importance of maritime communications; directly because no country produced in itself

all the materials necessary to the arming and equipment of its forces ; indirectly, because the diversion of labour to the war industries, as well as to the fighting line, inevitably reacted on the home output, whether of food or of the civil industries."

In view of the course of events since September 3, 1939, it is not unprofitable to recall that the outstanding lesson of the first World War was that ships are the essential foundations of success in an international war, especially in the case of an insular Power—in other words, the first aim of such a country must be to use the seas herself and to deny their use to the enemy. It was in face of that condition that British merchant shipping was permitted to decline by 2,000 sea-going vessels between 1914 and 1939, though it was obvious that it would be useless to gain command of the sea unless we could profit from that command ; and it was also in face of that condition that the Royal Navy was deliberately reduced to a mere skeleton of its strength at the time of the Armistice, its *personnel* being cut down by 75 per cent. British sea power was light-heartedly sacrificed, though, as General Smuts has since declared, it should have been evident to those in close touch with events on the Continent that the war of 1914–18 contained the seeds of another war. In fact, the first and second World Wars form two episodes in the one tragedy.

SHIPS AND MEN IN THE PRESENT WAR.

In these circumstances, the British Government entered the war in September, 1939, with its main arm withered, while the enemy was in a position to attack with U-boats of longer range and improved mines, and had the added advantage of long-range bombing aircraft. But in spite of all that, priority in war production in the British Isles was given to tanks, guns, aeroplanes and other munitions, and the Ministry of Labour and National Service withdrew men from the shipyards and engine shops, already short of labour, for service in the Army ; in the matter of material the claims of the shipbuilding industry were regarded as secondary to those of munitions.

It was not until the summer of 1942 that shipbuilding was given first priority in regard to labour and materials, and then the crisis required that women should be drafted into the shipyards. As a result of this conversion to the Blue Water doctrine, and the enforcement on the civil population of a more rigorous scheme of rationing than had hitherto been experienced, sufficient shipping was provided for the carriage of supplies across the Atlantic and for the conveyance to the coast of North Africa in November last of the greatest military expedition ever moved across the sea. What did this involve ? Colonel Frank S. Ross, the head of American Army Transport, has given some figures of the amount of cubic feet and dead-weight space required for the movement of troops. " Each time a transport crossed the Atlantic or any other sea, the number of men she could carry decreased. For example, 2,000,000 tons of shipping were needed for the transport of 125,000 men on the first trip. On the next voyage, the ships would need to carry new equipment and supplies for these 125,000 men, leaving space for, say, 100,000 men, and this number would decrease until one day there would be room for no men at all."

The expedition to North Africa was a triumph for the shipbuilding industry, for the seamen of the merchant service, and for the Ministry of War Transport, working in association with the Admiralty and the Air Ministry. Hundreds of merchant ships, many of which had to be

specially fitted for the occasion, were got together by Lord Leathers's staff, and, shepherded by men of war and aircraft, they proceeded on their way to the complete surprise of the enemy, once more illustrating the importance in war of the element of surprise and the advantage in that respect which the sea conveyance of troops confers even in these days of watchful aircraft. In this way, the peculiar virtue of sea power was once more exhibited. While the naval blockade was still being enforced so as to deny the use of the seas to the enemy, and to ensure the flow of seaborne supplies to the United Nations, this expeditionary force proved that, in fact, the sea, with adequate air support, does control the land. Sea power, reaching out its long arm to North Africa, provided the springboard from which the military and aerial offensive against the enemy could be made with an effectiveness far greater than if an attempt had been made to land on the well defended shores of Norway, Holland or France. This advantage was enjoyed because we had merchant ships, manned by seamen of skill, resource and courage.

As to the progress of the Battle of the Seas in 1942, the only figures as to the success of the enemy's war on shipping were contained in a message from New York to the effect that "in the year since the treacherous attack on Pearl Harbour, 548 Allied and neutral ships had been lost in the Western Atlantic." No particulars of the losses elsewhere have been published. Nothing was revealed as to the casualties among the officers and men in the ships—casualties, which apart from all humane considerations, are far less easily made good than the losses of ships, which by the end of 1942 were being replaced by the shipyards in the British Isles, the United States and Canada, with a balance on the right side of the ledger. Before the end of the year, the production of tonnage by the United Nations was, in fact, larger than the destruction by the enemy owing to the almost miraculous speeding up of shipbuilding in the United States, which launched 8,000,000 tons deadweight in the twelve months, with a steadily rising output for 1943, when an output of at least 16,000,000 tons deadweight was forecast. But the gravity of the crisis was only partially revealed by the sinking of ships, because the figures concealed the influence which the war was having on ocean-borne supplies. The greater number of vessels destroyed by gun, torpedo or aerial bomb were carrying urgently needed cargoes of food, raw materials or munitions. Day by day as the shipping losses mounted up, the supply programme was disorganised and readjustments had to be made in relation to the increasing demands of the troops of the United Nations engaged in operations in the West and in the East, all of them dependent on the one pool of tonnage and trained man-power. This was an aspect of the war at sea on which no light could obviously be shed without conveying valuable information to the enemy. But the fact that the losses of tonnage involved the loss also of so many badly needed cargoes was not the least serious aspect of the sea campaign which the enemy was waging. It emphasised the vital character of the Battle of the Seas in its influence on the ultimate issue of the war in both hemispheres, and it also emphasised the supreme contribution to victory which the seamen of the ships of commerce, as well as of the ships of war were making to victory.

STATUS OF MERCHANT SEAMEN

Though the public was unconscious of the full implications of the struggle, it realised that the men in the merchant ships, serving in vessels

not built for a contest of violence and themselves untrained in the arts of war, were rendering unique service to the cause of civilisation. Perhaps none was more impressed by the conditions under which these seamen, uncovenanted to the State, were carrying out their duties, than naval officers, as successive debates in the House of Lords, in which Admirals of the Fleet Lord Chatfield and the Earl of Cork and Orrery took part, as well as in the House of Commons. They urged that nothing should be left undone which would make conditions on board the merchant ships as comfortable as possible and increase the chances of survival of officers and men when their ships were sunk under them. It was a highly creditable exhibition of sympathy, even though it ignored the different conditions under the White Ensign and the Red Ensign. The Royal Navy is a national service, a charge on the tax-payers, and shipping is an industry like any other industry, and is normally influenced by economic rather than political interests. The merchant seamen, as Lord Strabolgi remarked on several occasions when acting as spokesman of the National Union of Seamen, had no wish to exchange the National Maritime Board for the Board of Admiralty, or any other department, sacrificing the right of combination to improve their lot which is enjoyed by workers in ship-yards and factories, even though it conferred on them the prestige of being entitled to receive military, as distinct from civil, rewards for acts of devotion and gallantry in face of the enemy. The plea of the merchant seamen was that they had gone to sea as civilians and that they wished to preserve that status, even though the enemy had forced them into the forefront of the war at sea. In the course of a debate in the House of Lords, on December 4, the view of the Ministry of War Transport was stated. The civil and military divisions of the Order of the British Empire, it was explained, were of equal status, and the nature of the award depended simply on the calling of the recipient and not upon the merits of the service performed. In these circumstances, it was not considered that military awards within the order were appropriate for those serving in civilian occupations, however gallant their exploits might be.

THE NATIONAL MARITIME BOARD.

But while the Ministry of War Transport opposed a change in the status of the merchant seamen, it made it clear that there was no intention of neglecting their more material interests—pay and conditions of life on board ship. Throughout the war—as in peace time—the responsibility in these matters has been that of the National Maritime Board, representing owners, officers and men, with results which would certainly have been no better if the conclusions had been reached by a body subject to political influence. During the first three years of the war, all the conditions of life on board ship were bettered. In the matter of pay, in particular, the lot of the personnel was improved to a greater extent than in any other industry in the country.

It is not generally realised that before the war, when ships had to yield profits in what is essentially an international industry or be laid up in idleness, conditions of employment both for officers and men in the British Merchant Navy had been greatly improved. Few appreciate either the extent of the improvements or the fact that most of them were courageously introduced in an intensely internationally competitive industry from 1936 onwards, at a time when there were small signs of

reviving trade. Even the war-time changes have not been due to the initiative of the Government, but of the industry itself. The improvements have been the result, primarily, of the harmonious industrial relations between employer and employed in shipping. They have been due to the work of the joint industrial council called the National Maritime Board. The Board has been repeatedly quoted by Ministers as an outstandingly successful example of self-government in industry. Ever since it was set up in 1919, it has succeeded in avoiding lock-outs and strikes. It has proved invaluable both in peace and in war, and is a happy augury for the future of the shipping industry. It acts for the officers through the four Officers' Societies, for the ratings through the National Union of Seamen, and for the shipowners through the Shipping Federation and Employers' Association of the Port of Liverpool. Under war conditions, it is consulted almost daily by the departments concerned with sea transport, and is recognised as the mouthpiece of the industry in all matters affecting sea-going personnel.

The regulation of wages and hours is the normal work of the collective agreement machinery in any industry. At the beginning of 1935 the monthly wages, with food found, of that key rating, an A.B., were £8 2s. 0d. They were increased in 1936, 1937, 1938, 1940 and in February 1943 were raised to £14. It is worth emphasising that at the outbreak of war a British A.B. was receiving the same wages as the Dutch and more than any other European seaman. For the most junior grades of navigating and engineer officers the corresponding increase has been from £9 9s. 0d. to £18 for those with certificates, and to £17 for those without. War Risk Money was introduced 12 days after the present war started, an illustration of the speed at which the National Maritime Board can work. The present rate for adults is £10 per month.

The hours agreements for ratings were overhauled in 1936, and there are now comprehensive agreements for every department in foreign-going ships and special overtime arrangements for home trade ships. For the deck and engine room, for example, in foreign-going ships of 2,500 tons gross or over, there is a 56-hour week at sea, a 9-hour day (10 hours for the deck) on sailing and arrival days, and a 44-hour week in harbour. The hours of officers are also either regulated directly or compensation is made.

But owing to the special nature of shipping, the National Maritime Board's work goes far beyond wages and hours. The new and up-to-date Statutory Food Scale of 1940 is the result of proposals drawn up by the National Maritime Board before the war. The Board of Trade Code of 1937 regarding structure and equipment of crews' quarters, which has been officially described as second to none in the world, also gave effect to agreements reached by the Board. To supplement this, the National Maritime Board adopted in 1938 comprehensive arrangements in the equally important, and in some respects more troublesome, questions of cleanliness and comfort of accommodation. The National Maritime Board also requires bed and bedding or payment in lieu to be provided on all ships for both officers and men. It has set out a scale of compensation by owners for marine loss of crew effects—clothing, instruments, etc. It has made a number of manning regulations for officers and ratings; the deck ratings' section was responsible for drafting the rules now embodied in the deck manning safety scale for all foreign-going ships. In order that a seaman's family may not be in need or rely solely on the inadequate

benefits of health insurance, the shipowners have gone far beyond their statutory obligation to maintain a sick seaman in hospital when he is discharged abroad and now continues his wages for 12 weeks. Another outstanding improvement for officers was the establishment in 1938 of the Merchant Navy Officers Pension Fund. Although it has only been in operation for five years, its funds already exceed £2,000,000, and in 1941 the benefits paid out amounted to £61,278.

The war-time Merchant Navy Reserve Pool follows the lines of proposals initiated by the National Maritime Board. The essential features are that while seamen are prohibited, on the one hand, from leaving the sea, they are assured, on the other hand, continuous pay and adequate leave. The National Maritime Board's Agreements on paid leave are now, of course, suspended in favour of the Pool arrangement of 80 days' leave per annum for officers and 24 for ratings. The Pool was, in fact, a complete revolution. That it has worked so satisfactorily is due primarily to the administration having been left to the industry itself. Finally, it may be added that the Board has advised the Minister of War Transport of its views on a system of continuous employment after the war. The official aim, as in the case of dock labour, is that officers and men who go to sea in merchant ships, shall be continually employed in all cases, instead of being signed on only for a particular voyage. It is testimony to the spirit in which shipowners are facing the problems of the New World that they are officially co-operating in order that continuous service, as in the Royal Navy, though with necessary variations, shall be permanently established.

IMPROVEMENTS IN EQUIPMENT

While the Ministry of War Transport has left the National Maritime Board to deal with the economic aspects of the life of officers and men, it has not itself neglected their interests. Since the opening of the war it has concentrated attention on the problems of safety of life in war conditions. It recognised that it was its duty to ensure that the merchant seaman was properly equipped to meet the additional perils arising from unrestricted sea warfare and gradually evolved a new Charter of Safety, which brought together all these existing war-time rules and regulations and added a number of new ones. "We have been living for three years in a scientific hothouse," the Minister (Lord Leathers)* stated in a review of the progress in this respect. "Devices which were considered the last word in 1939 have been progressively improved and a host of new devices have been produced"; and he added that there was "abundant evidence that these measures had been the means not only of saving thousands of lives, but also of avoiding much hardship and suffering." The earliest developments followed closely on the sinking of the s.s. *Athenia*, with the loss of over 100 lives at the beginning of the war. Attack without warning came to be the general practice of enemy submarines, and ships often sank before there was time to get the boats away. In these circumstances, the Ministry did not delay until equipment was technically perfect. The most pressing need was to provide rafts which could be easily launched, and life jackets (described as waistcoats to distinguish them from the pre-war types), which could be worn continuously while men were in dangerous waters. Improvements came later, until to-day the rafts afford so high a degree of protection that, in one instance, nine men survived the perils

* "Safety at Sea," by Lord Leathers, *Shipping World*, September 23, 1942.

of a shark-infested sea until rescued in good condition after 34 days, during which the raft had successfully ridden out heavy seas.

As the Minister recalled, "the sufferings of the survivors of sunken vessels in the early stages of the war were indescribable. They endured agonies of frostbite, exposure and thirst. They sighted aircraft and ships but lacked adequate means of attracting them. Often at night they were left struggling in the water because they could not be found, and had to watch the lights of the rescue boats receding." The hardships of survivors in boats and on rafts, though still severe, have been mitigated by the best equipment which science can devise, including weatherproof suits, manual pumps and massage oil, and by more varied and nutritious rations, with greatly increased rations of water. The means of calling help or attracting aid have been multiplied and improved. Rafts are now automatically lighted up when they float free of the ship. Lifejackets and waistcoats are fitted with small electric lamps—the seaman's safety lamp—to guide the rescue boats to survivors. In addition, special equipment has been provided for the protection of the crews of tankers. As an illustration of the effect of these improvements, when a passenger ship was torpedoed early in 1942, the crew and passengers, numbering 335 persons, took to the boats and rafts. The next day an aircraft was sighted and hopes ran high, but the plane disappeared without seeing them. Some hours later another aircraft was sighted and this time the attention of the pilot was attracted; he dropped a message saying that he was sending help immediately. Surely enough, first a merchant vessel and then a warship appeared, and everyone of those survivors was saved. The signal which proved so effective in attracting aid was the new orange-coloured smoke signal which is now a compulsory part of the equipment of every lifeboat and raft.

As an indication of what the new requirements for making the sea safer has meant, in terms of manufacture and supply, it may be mentioned that the Ministry had already issued to ships by the middle of September last, over 50,000 smoke signals, more than 150,000 weatherproof suits and thousands of portable wireless transmitting sets. Over 1,000 tons of new foods had also been supplied in airtight containers of 2 lb. for lifeboats and 1 lb. for rafts. The process of development has been continuous and among the new measures, which have been made compulsory, are a number intended to help seamen to make a quick get-away from sinking vessels.

In summing up this movement towards increased safety at sea, Lord Leathers explained that well-meaning people often wrote to him asking why he did not insist on the provision of certain additional comforts for occupants of lifeboats or the adoption of some new safety device. The answer was that every inch of space in boats and rafts had to be used to the best advantage, and that, with few exceptions, most of the suggestions advanced had already been exhaustively examined and rejected, usually in favour of something better. At the same time, the Ministry, he added was always ready to assist in the development of any promising idea from outside. "All who have co-operated with the Ministry in this work—owners and men, manufacturers of ship equipment and scientific and other experts—will," he concluded, "have noted with pride that the recommendations made by the Joint Maritime Commission of the International Labour Office at their recent meeting in London follow very closely the measures adopted in this country."

"These measures are regarded by Allied Governments as exemplary and have already been generally adopted in their ships. I think we may claim, therefore, with all modesty, that British war-time rules of lifesaving are by way of becoming an international standard."

"It is the fixed determination of the Ministry to raise that standard continuously. The perils surrounding our men are greater to-day than ever, and we must redouble our effort to promote their safety. So long as a single life is lost which could conceivably have been saved, we shall not regard our work as complete. Nor shall we be content, when the war is over, simply to return to the old peacetime standards. Out of this war has come a clearer recognition than ever before of our obligations to the merchant seaman and of the need for improving his conditions of employment. As to conditions, both sides of the industry are agreed, in principle, that wartime improvements must be preserved, and I am sure that both sides will recognise equally the need for continuing our efforts to mitigate the hardships and diminish the risks of the seaman's calling. The requirements of peace necessarily differ from those of war, but whether in war or peace our aim must be to provide the maximum degree of safety. Nothing less will satisfy us."

THE FUTURE OF THE SHIPPING INDUSTRY.

In time of war, the lot of the seaman has naturally attracted far more attention than the fortunes and misfortunes of the shipowners. It has been urged, and quite rightly, that the first consideration must be the winning of the war in the shortest possible time and with the least suffering to officers and men. But as news has come to owners of ship after ship being sunk—in some cases whole fleets being lost in the course of a few months—they have been forced to consider the effect which such widespread destruction would have on the industry when peace conditions of trading are re-established and they have to trade in competition with foreign rivals, many with the dice loaded in their favour in respect of wages, the charges for social services, and the burden of taxation. Hundreds of the ships which they willingly loaned to the State have disappeared and have been replaced, in part, by new vessels, built at the cost of the State and remaining the property of the Government, at an expenditure exceeding that which was incurred on the original ships by 50 or 60 per cent. as compared with 1938. Early in 1942, the Ministry of War Transport announced that these ships—built as a rule to pre-war designs—would be allotted to owners of lost tonnage in rotation at the cost of construction, but that physical transfer of ownership would be delayed until after the end of the war. It was afterwards revealed that the issue of a licence to build to their own specifications so as to suit the needs of the particular trade in which they were engaged under peace conditions would depend upon the particular shipowner's response to the official invitation to purchase tonnage not, in most cases, meeting his needs. The dilemma was embarrassing. On the one hand, it was obviously desirable to remove the possibility that the Government would operate its own ships, and, on the other, it was undesirable to acquire—and that in the unknown economic conditions existing after the end of the war—tonnage which would not embody modern features of design and equipment, especially in regard to speed.

In these circumstances, the future of the industry remains uncertain, while responsibilities in regard to the wages of officers and men, as well as the conditions of life on board ship and on shore, have been agreed to which may prove a serious competitive handicap in peaceful trading. Towards the end of 1942, the Minister of War Transport stated that "the White Paper on the replacement of shipping losses issued by the Government in May 1942 in no way prejudiced the organisation of the shipping industry after the war; that question will, of course, be settled by Parliament when the time comes." On the other hand, he recalled that he had

given an assurance that the policy of his Majesty's Government was that after the war the British mercantile marine would be maintained in an adequate state of strength and in a position of full efficiency, "in which term," he added, "I include the best attainable conditions of employment for the officers and men who are serving the country so well." Ship-owners, accepting to the full their own responsibilities, are consequently still in doubt as to what the future of the industry will be and what therefore the future of the officers and men engaged in it, for without ships operating at sea there can be no employment for them.

It may be admitted that it is difficult to forecast the conditions which will exist at sea when the war is over. The Axis Powers have lost by sinking or capture more than half the tonnage they possessed at the beginning of the war without, so far as is known, replacement. The United Nations are replacing their losses with, it is true, ships which are for the most part of pre-war efficiency: in the case of the United States much more than this is being achieved, for the shipbuilding programme envisages the American shipping industry emerging from the war with a far greater volume of tonnage than any other country will possess. There are indications that it is not the intention of the American Government to retain the ownership of these ships; they will be disposed of to private American owners, though the Maritime Commission is now responsible for building America's ships and operating them. Admiral Emory Land, its chairman, has repeatedly emphasised that the corollary to the war effort of the American shipyards is the permanent up-building of America's shipping. He has spoken of the "dominating part" American shipping will play in post-war international trade; the "wonderful opportunities" for the future provided by the emergency shipbuilding programme; and reiterated the intention of the Maritime Commission to ensure that war-built tonnage is put to full use after the war. Lately he has discussed the situation created by allocations of American ships to the United Nations. The title and control of these ships, he has assured American owners, will remain in the United States. For the rest, Admiral Land declared:—

"We are going to build a solid foundation for the American merchant marine, making this country a No. 1 maritime nation for all time. We have a grand opportunity and we will not make the same mistake we made after the last war. Get this firmly fixed in your minds—the control of the United States flag ships is going to remain in the United States."

"We are seeing to it this time," he added, "that the American merchant marine of the future is not handicapped by reliance upon vessels unsuited to commercial competition." The significance of these statements lies in the fact that by 1945 America will own much more shipping than Britain possessed in September, 1939, and that the fleet on the United Kingdom Register will be smaller than that which flew the Stars and Stripes before the war. Will American shipping be able to operate without subsidy? And if not, can the United States maintain, by means of Government aid, shipping services vastly more extensive than before the war without inviting counter-subsidies? Post-war shipping, in the international sense, cannot, in fact be regarded as in a compartment of its own. It lies at the very root of every aspiration towards a healthy post-war world economy. In these circumstances, it must be conceded that it is difficult to foresee under what conditions peaceful trading by British ships will be resumed after the period of

controlled sailings which will be adopted while Europe is being revictualled comes to an end.

Lord Essendon has expressed his views on the future of the British shipping industry generally :—

“ Any policy for the retention of the ships by the Government to be operated in competition with the British shipping industry would be a poor return for all that it has done in past years in face of tremendous difficulties to maintain the standing of the British mercantile marine. I have always maintained, and I make no apology for repeating it, that nationalisation of any industry is only justified :—

1. If it can be shown that the industry in question has failed to provide for national needs.
2. If the Government can do this more efficiently and more economically than individual enterprise.

“ Are we to say that private enterprise, as in the case of public companies, ceases to be private enterprise when applied to the individual in his efforts to improve his remuneration and station in the ordinary walks of life, and that it is to be condemned in the one case and glorified in the other ? In any walk of life a lack of initiative means a corresponding lack of efficiency, and human nature is so constituted that whenever lack of incentive comes in at the window, efficiency and initiative go out of the door.”

British shipowners can only wait and see until the war is over and it becomes apparent, first, to what extent the balance of commercial seapower throughout the world has been changed, and, secondly, whether political influences are to be permitted to interfere with the work of rebuilding British merchant shipping which will have been largely sacrificed in winning the war. And in this connection, it cannot be forgotten that this industry is responsible for the most valuable exports of all British industries ; it was responsible for “ invisible exports ” amounting to £300,000,000 in a good year of trading—1920. These exports will be all the more necessary in future years in order that the national trading account after the war may be balanced. The other “ invisible exports ”—the interest on foreign investments and the commissions of insurance brokers, bankers and merchants earned in foreign countries—will no longer be available, at least, to as great an extent as in the past. Most of the investments have been surrendered to pay for the war or have passed temporarily into enemy hands, and it will be a matter of time to restore such economic conditions abroad which will enable British insurance brokers, bankers and merchants to do business abroad.

ARCHIBALD HURD.

CHAPTER IV.

AIR OPERATIONS AND THE WAR AT SEA.

NINETEEN FORTY-TWO was much more than a year of transition in warlike operations ; it was also a year of transition in allied warlike ideas. It marked the final abandonment of the extreme, all-air, theories and the adoption and application of the theory of the " balanced force." This was true of operations on land and sea, and it demonstrated the validity of those sober criticisms which had urged that sea power, land power and air power were components of three-dimensional fighting power, and that an air force attained the peak of its military value when it worked in conjunction with a navy or an army. Between the fall of Singapore in February and the beginning of the allied amphibious operations in French North Africa in November there is to be seen, for those who look deeply enough, the whole span of thought and understanding in the use of air.

There is no need to take particular notice of those early reports that Singapore had always been completely defenceless from the land side and had been constructed solely as a naval base, but it is certainly true that the war doctrine epitomised by the defences of Singapore was based on a belief in the divisibility of land and sea warfare. If the attack comes from the sea, this reasoning went if put in crude form, it will be repelled by ships and by naval installations ; if it comes from the land (and that contingency is remote owing to the favourable strategical situation) it will be repelled by armies. The gradual development of the military powers of the aeroplane continued, but the Singapore concept remained the same. That both sea power and land power could be separately set aside by the enemy if they were not permeated by and invigorated by air power, did not appear. That great warships could be sunk and heroic land forces hounded down the peninsular by dive bombers, was not present in the minds of those who created and stood by the defences of Singapore. How different is the picture which emerges from the landings in French North Africa which came only nine months after the Japanese had poured into Singapore, taken a great number of prisoners and struck the heaviest blow at the very foundations of Imperial strategy, and, indeed, of Anglo-American strategy. In November, while the demands for more vigorous allied intervention in the war still echoed and re-echoed in press and Parliament, a vast force moved into the Mediterranean, taking with it its own air cover in the form of large numbers of naval aircraft, some of types freshly adopted for ship-borne employment and made successful landings.

At the same time special airborne forces were flown out, sometimes in direct stages from England to Algiers, to occupy aerodromes and prepare them for the Royal Air Force aircraft that were to follow. The air was here permeating the entire plan. Naval aircraft worked from carriers and, at times, from land bases. Royal Air Force aircraft were ready to interlock with them and parachutists and other Army airborne forces made their own special contributions. The longest parachutist operation occurred at this time, on November 8, when United States parachutists flew in a Douglas C-47 aircraft from England to Oran. British parachute troops were flown to Tunisia and they were used at

Maison Blanc and Bône aerodromes. It will be seen that the air element was to be found in every stage of the French North African operations. Indeed, it also appeared in the preliminaries when the Royal Air Force Coastal Command undertook special duties in the Bay of Biscay and thereabouts. These, then, are the two extremes; Singapore and French North Africa. But in between 1942 was a year of remarkable development for the "balanced force." Carriers played a more prominent part than ever before; there were many fine actions in which they dominated the situation. There were also many losses of carriers on both sides. The particularly noteworthy Midway action, which began on June 4, was a classic piece in which United States naval aircraft contributed a historic comment on the part that should be played by air power at sea.

In previous contributions to "Brassey's Naval Annual," I have insisted on the value of full air-sea collaboration, and have repeatedly urged that air power becomes twice itself when it works harmoniously with sea or land power or both. At the risk of labouring the case I would point to the following events of the year 1942, all of which, rightly interpreted, support the argument for the indivisibility of sea and air power.

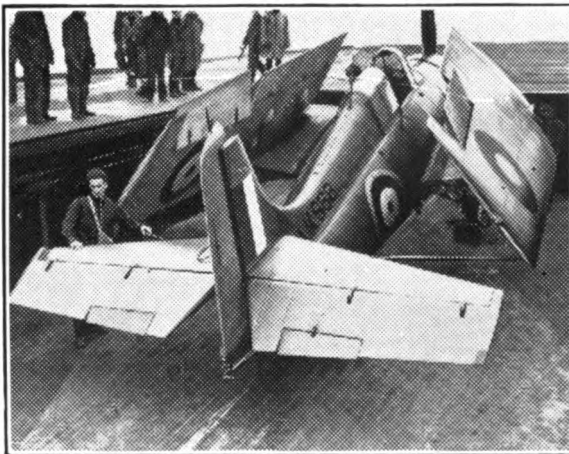
1. The escape of the German warships *Scharnhorst*, *Gneisenau* and *Prinz Eugen* from Brest along the English Channel in February.
2. The sinking by Japanese aircraft of the *Dorsetshire*, *Cornwall* and *Hermes* in the Indian Ocean, and the attack on Trincomalee, the naval base in Ceylon, in April.
3. The Coral Sea action in May.
4. The Midway action in June.
5. The Mediterranean convoy action in August.
6. The combined operation at Dieppe in August.
7. The United States and Australian expedition against the Solomon Islands with the concurrent air-sea actions in August.

The escape of the German warships along the English Channel had a sharp psychological impact on the people of Britain and led to a great deal of vigorous if not violent criticism which was largely directed at the failure of our aircraft to sink the ships and especially at the delay which occurred between the time the ships left Brest and the time of the first torpedo attack upon them by Swordfish aircraft flown by supremely gallant naval crews. This criticism eventually led to the setting up of a committee of inquiry under Mr. Justice Bucknill with Air Chief Marshal Sir Edgar Ludlow-Hewitt and Vice-Admiral Sir Hugh Binney as assessors.

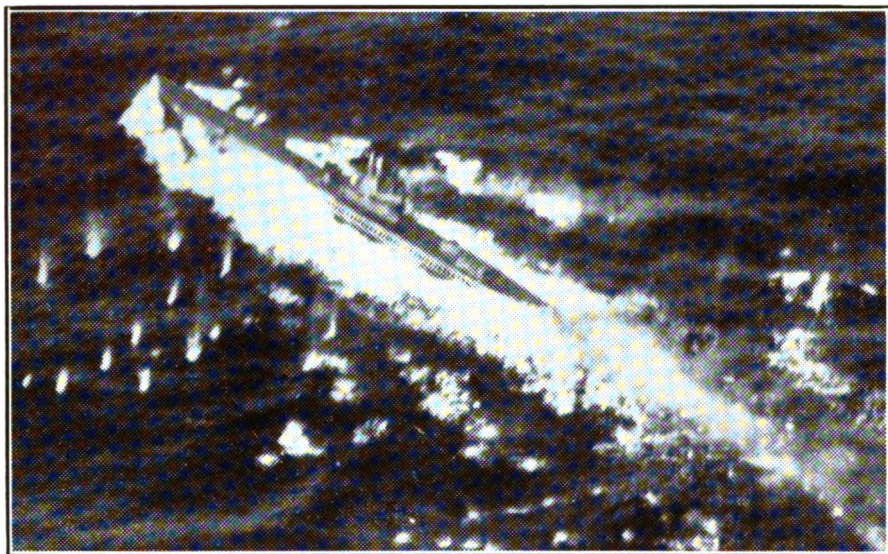
There were many points of the highest technical and tactical interest in this escape of the German warships, but these are not as yet free for publication. It can, however, be said that the action supported in the minds of the public the belief that there was still insufficiently close collaboration between the Royal Navy and the Royal Air Force and this, curiously enough, partly because there was a widespread uncertainty as to the department that ought to be reproved for letting the ships get away. Both Services had played a part in the action; their pilots and air crew members had displayed the highest gallantry and devotion to duty. But neither Service—as it appeared to the public at the time—was responsible. Here we have in miniature one of the essential problems of sea-air collaboration; that concerned with responsibility for operations in coastal waters. If sea and air power are one and indivisible, it sometimes becomes awkward when two separate Services are dealing with them both. And this difficulty arises in spite of the most loyal efforts on



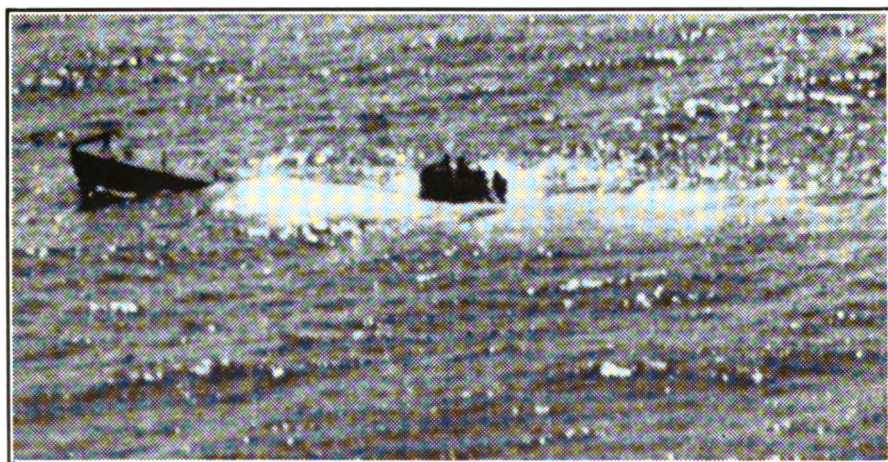
Minelaying by the R.A.F. A naval Petty Officer adjusting a mine in the aircraft.



Naval fighter aircraft on carrier's lift.



A U-boat under fire from a British aircraft.



The same U-boat on the point of sinking.
(Official Photograph. Crown copyright reserved.)

the part of the officers of both Services to work in the closest concert. The solution to this problem, as it has begun to emerge during the year under review, is that of retaining the three Service system, with the separate Air Force, a system which now has the full approval of nearly all experienced officers, but of providing the Royal Navy with a more extended scope in the appropriation of aircraft, in the decisions as to their types and in related matters. In this way the Navy eventually arrives at the position when, as in the North African operations, it can move with its own air cover yet can link with Air Force formations where necessary. It is seemingly a small modification in the organisational structure; but it has its important implications. For instance, when it is said that the technical quality of naval aircraft has lagged far behind that of Royal Air Force aircraft, the reply is sometimes made that enthusiasm and energy for full development is unattainable in a Service, when that Service must make its requirements known through another Service. And there may be something in that reply. It is certain that the Swordfish has been sharply condemned on account of its inordinately low speed and general obsolescence. Yet some naval pilots will still argue in favour of the Swordfish on account of its comparative quietness and, more especially, on account of the fact that during the early stages of the war at any rate the process of dropping a torpedo demanded a low flying speed. The fast aircraft, therefore, had to knock off its speed and perhaps even lower its flaps, before dropping its torpedo and it was then that the guns of the warship being attacked were likely to be most dangerous. It was an advantage, according to the Swordfish exponents, to be able to take sharp evasive action immediately after releasing the torpedo. The argument held good to some extent for the Albacore, another relatively slow biplane. But it was over-borne when the fast United States torpedo aircraft proved themselves in action. The Avenger, in particular, distinguished itself in the Pacific and showed that a modern style of monoplane, with torpedo carried largely within the fuselage, could do all and more that the older types could do. It would be fruitless now to enter into a discussion of whether, had the Royal Navy always retained its own, unrestricted air service, its Royal Naval Air Service in fact, it would have pressed forward more energetically with the development of ship-borne aircraft and of all classes of essentially naval aircraft. The fact is that the Royal Navy, though at Taranto and elsewhere it showed an early appreciation of the power of the air, was not equipped with first-class aircraft in all categories of modern type. Another instance which really belongs to a later period than that of the escape of the *Scharnhorst*, *Gneisenau* and *Prinz Eugen* along the Channel, concerns the fighters. It had been assumed—and on good theoretical judgment—that fighters designed for use with the fleet and for operating from carriers, must be aircraft with comparatively slow landing speeds and taking off speeds. It had also been ingeniously put forward that the naval fighter, intended to take part in actions over the sea and out of sight of land, ought to carry a navigator. The *Fulmar* carried a pilot and a navigator. It was armed just as the early single-seat, land-based fighters were armed, that is with eight machine guns, four in each wing, all fixed to fire forwards in the line of flight. The tactical conception behind this machine was that the pilot fought the aircraft just as if it had been a single-seater, but that the navigator sought to keep an approximate check on position during the drift of the battle, so that when it became possible to disengage, the pilot could be given a

bearing which would bring him back to his carrier. I am bound to say that I was impressed by this theoretical reasoning. I believed for a time that the sacrifice of speed and powers of manoeuvre in order to carry a second man was justified, and particularly because I believed also that it would be impracticable for ordinary naval pilots to work the higher performance, land type, of fighter from carrier flight decks. But it proved otherwise. Naval pilots made experimental flights from carriers with a Spitfire, the fastest of the fighters and the most manoeuvrable. Before that it had been found that the Hurricane could be worked from carriers and it was also being used, of course, for catapult service in merchant vessels. But it had not previously been supposed that the Spitfire, which had the reputation of being somewhat sensitive to landing conditions and to need a good surface and a long run, could be worked satisfactorily from ship decks. But the Spitfire was found by naval pilots to be satisfactory for this and not to be too difficult for the skill of the average pilot with deck flying experience. The eventual outcome was the emergence of the Seafire, an aircraft like the Spitfire in almost all respects except in the addition of arrester gear. This machine took part in the North African landing operations and proved the best ship-borne fighter of the time. It even showed an advance in performance and fighting qualities on the excellent little Martlet, which the United States Navy calls the Wildcat.

The feeling that naval aircraft and naval aviation should in general be given greater scope and greater encouragement to expand, was further supported by the curious Indian Ocean action of April. This, if anything increased the bewilderment felt at the time of the escape of the Scharnhorst, Gneisenau and Prinz Eugen. For it seemed to confirm a suspicion that had been born at the time of the sinking of the Prince of Wales and the Repulse, that the enemy's naval aircraft and sea-air tactics, were superior to our own. It seemed that the Royal Navy should be freed from the restrictions which had earlier bound its aerial activities. In this Indian Ocean action the purpose of the Japanese forces was no doubt to test the allied strength in Ceylon. Everything was almost certainly ready to enable them to follow up the first attacks with powerful forces, both sea and air. But the Japanese found, as it turned out, that Ceylon was better defended than they had been led to believe by their intelligence. They did, however, do damage to the British installations and they sank the Dorsetshire, the Cornwall and the Hermes. The first two were sunk on April 5 and the last on April 9. On the fifth the Japanese mounted a heavy raid on Colombo, but lost 27 aircraft, and on the 9th they attacked Trincomalee and lost between 15 and 20 aircraft. The Japanese were reported to have used dive-bombers against the British ships; but it was later reported that the aircraft were single-seat fighters, each carrying one medium weight bomb, and employing dive-bombing methods in their attacks.

A pause here is needed in order to keep the actions that have been referred to in perspective with the actions to come in the later period. So far the enemy had enjoyed remarkable success in his use of air at sea. The Germans had exhibited in their ships an extraordinary toughness in the face of repeated torpedo and bombing attacks in coastal waters; the Japanese had exhibited a sureness of touch and a deadliness in their dive-bombing and torpedo-dropping, that suggested that an enormous amount of thought had been given by the Japanese navy to the use of aircraft in naval actions. One other thing had begun to emerge and was later to

be confirmed, that the most important types of aircraft for co-operating with fleets at sea on the offensive side, were dive-bombers and torpedo-carriers. These two had proved to be on the whole more successful than high-level bombers, even when these were using specially adapted pattern bombing for their attacks. On the defensive side no superior to the land-based type of fighter was found and in general the nearer the ship-based machine came to the land-based machine, the better fighter it proved to be. Attempts to introduce specialised ship-based fighters had not been successful.

We now come to a change in the fortunes of the United Nations in their sea-air operations. Two historic actions appear in the picture of the air at sea in 1942; the Coral Sea and the Midway actions of May and June. Both these actions deserve a detailed study and the official accounts should be scrutinised for the facts. Here I want to glance at their wider implications. Both actions were naval and both actions supported those who liken the aircraft to a long range gun and to nothing else. For they were fought mainly at long range, with aircraft striking the blows. First announcement of the action to be made in England was on May 8, when it was said that a naval and air action was proceeding in the Coral Sea, and that it was going in favour of the United States forces. It was later stated that the Japanese had lost an aircraft carrier and a heavy cruiser sunk and twelve other ships sunk or damaged. It was in this battle that the United States aircraft carrier Lexington received damage which later caused her to sink, and there were two other United States ships lost. It seemed from the scanty and intermittent information that came in that the Japanese had sent out a powerful expedition and that it was directed towards Queensland. As a result of the Coral Sea action it was forced to retire.

As for the Midway action, which should be looked at together with the Coral Sea action, its magnitude did not appear in the early announcements which simply stated that Japanese carrier-borne aircraft were raiding Midway Island, but were being engaged and driven off by counter-attacks. It was not until the United States naval authorities issued a statement that the Japanese had lost four aircraft carriers sunk, two battleships damaged, two heavy cruisers sunk with others damaged, three destroyers sunk and one light cruiser damaged, that it became clear that one of the outstanding engagements of the war had been fought.

It has been said that the Japanese had given indications of the care and thoroughness with which they had studied the whole problem of the use of aircraft with fleets at sea; now the United States showed that their Navy also had studied the matter and had some original thoughts upon it. The United States Navy was one of the few at this time mainly equipped with high performance monoplanes. Both the Royal Navy and the Japanese Navy had many biplanes in first line service. But a great many features of United States carrier practice were experimental. The average complement of aircraft was high for the size of the vessel and some of the aircraft appeared to be of a type which might be difficult to handle in the stress of action. Fortunately the American experiments succeeded, and they were able to put up more powerful air forces than the Japanese.

It was from the first a mutual race for aircraft carriers. Both sides, thinking in advanced sea-air terms, believed that the chief danger lay in the carriers; the initial stages of the battle, therefore, were a series of

aircraft sorties against carriers. The casualties suffered were exceedingly high. Indeed, one report put the Japanese losses at 275 aircraft, a figure tentatively given by Admiral Nimitz. In view of the loss of four carriers, this may well be about the right figure. But the losses were by no means confined to those aircraft which went down with carriers. The torpedo attacks were extremely costly. United States naval airmen displayed a courage which must be a lasting inspiration to their comrades when they made their repeated torpedo attacks, pressing them home with determination in the face of withering fire and after large numbers of their predecessors had been shot down into the sea. It was in this action, as was announced from Washington in September, that the carrier *Yorktown* was lost. It was, in fact, a particularly violent battle in which both sides threw in ship-borne aircraft on the largest scale. It testified not only to the effectiveness of torpedo-droppers and dive-bombers against ships, but also—to a large extent—to the accuracy and power of modern ship-borne anti-aircraft artillery. It also showed that the carrier was gradually assuming a position of even greater importance in the scale of battle values. The tactics of both sides were to go for the carriers and to continue to go for them while any lasted. For every carrier remaining in action constituted a threat to all other vessels.

Convoy actions had, perhaps, given some inkling of what a major naval action would be like in so far as the air side is concerned. And one of the developments which had been pressed forward for many months was concerned with providing every convoy with what amounted to carrier protection. Carriers could obviously not be spared for the passing of every convoy; but the catapult fighter was installed in larger numbers of merchant vessels. A major convoy action in which carriers were used on a large scale was that which was reported by the Admiralty on August 14, though the action was joined on the 11th. In this action the carrier *Eagle* was sunk by submarine and so was the anti-aircraft ship *Cairo*. We suffered other losses as well, but the convoy reached Malta with a substantial part of the supplies needed by the island. The air fighting was fierce and almost continuous. The enemy lost at least 66 machines, while our losses were eight. It was only during the latter stage of the convoy's passage that the Royal Air Force fighters based on Malta were able to come out and help in the battle. For the rest ship-borne machines were employed and put up a fine performance in the face of opposition from numerous kinds of German and Italian aircraft. This convoy action is mentioned because of the fierceness of the air fighting; but in many others air operations played an important part and this applies especially to the convoys for Russia. On this route, as on that to Malta, the ships had to pass within range of shore-based aircraft, and so each time the fundamental trial of strength occurred between shore-based and ship-based machines.

Indeed, the story of the development of convoy air protection, is largely a story of the struggle between ship-based and shore-based machines and is a gauge of the effects which the nature of the base has upon an aircraft's performance in the air. By the bold, forward-looking developments undertaken by the United States Navy and by the Royal Navy in the employment of high-performance aircraft for deck flying and catapult work, much was done during the year to close the gap between ship-based and shore-based machines. It may be that the gap will never be completely closed; for it is obvious that the fact of having a long, fixed,

runway is always likely to confer some advantage on the designer of any aircraft with wheeled undercarriage. But we have to note also that the operational areas prescribed for any aircraft are a function of its landing and taking-off qualities. The effect of this is interesting. As the aircraft performance rises through increases in landing and taking off speed, so the size of the aerodrome rises with it, and as the size of the aerodrome rises, so the area of operation becomes more restricted.

Obviously very large and elaborate aerodromes, with prepared runways, cannot be established close to enemy positions. They cannot be brought into existence quickly with an advancing army. In Tunisia, for instance, there was a restriction on air activity in the early stages through the scarcity of large, well prepared aerodromes. It follows, therefore, that the increases in performance of the land-based aircraft bring with them their own particular military limitations. A convoy sailing in the enemy's coastal waters will be attacked by land-based aircraft; but the enormous aerodromes needed for the ultra-high performance types of machine will not be established close to the coast and the land-based machines will lose some of their performance advantages through being based at comparatively long range from the scene of action. Compare the ship-based machine, deck flown or catapulted. This may be restricted in performance; but it is based actually at the scene of action and it gives no performance away in range.

Nothing is more technically arresting than the struggle, which reached a peak during 1942, between the ship-based and the shore-based aircraft. And in 1942 there can be little doubt that the ship-based aircraft made headway and closed the gap between themselves and the shore-based machines. The Seafire, indeed, is as good a fighter in the air as any of the Battle of Britain aircraft. From a study of the convoy air work of 1942 we may, with appropriate cautionary and restrictive clauses, lay down this rule: The higher the performance of a fighter aeroplane; the greater its aerodrome sensitiveness; the greater the aerodrome sensitiveness; the smaller the operational scope. The extreme case would be the aircraft that wants a two mile runway to work properly. It may have remarkable speed or load carrying capacity; but it can never go beyond reach of its highly vulnerable, tender, sheltered, *coddled* base. This is the ship-borne aircraft's strength, therefore, and it is a point which naval airmen will do well to emphasise at every opportunity; that it works comparatively close to its base and that the mobility and hardness of the base tend to compensate for the limitations it imposes on air performance. For the carrier is in fact extremely hardy as air bases go. It has often been criticised as being vulnerable; but it is vulnerable only relative to other comparable classes of warship. Relative to a land air base it is exceedingly tough, well defended and well capable of taking care of itself. Those who had experience of the bombing of land aerodromes during the Battle of Britain know that they can suffer severely and be put out of action almost as a carrier when it is sunk. Yet they are never sited as near the enemy's positions as the carrier must often work.

All this clarification of thought on ship-borne and land-based aircraft and their relationship to one another, and to land and sea operations was a useful feature of 1942. The conclusions reached will begin to appear as the war proceeds. They were largely the outcome of convoy experiences. But there was another kind of experience which taught its lessons and this was the combined raid upon Dieppe on August 19. The most pregnant

part of this operation was mainly concerned with land-air work rather than sea-air ; but the sea-air side has its indications. The essential feature of the sea-air side was the demonstration of the fact that British ships could remain for a long period within range of the enemy's shore-based aircraft of all types, yet could be afforded adequate cover by our own shore-based aircraft to enable them to conduct delicate and difficult amphibious operations. The actual raid occupied nine hours and during that time furious air battles raged in the vicinity. Each side lost nearly one hundred aircraft ; but the air balance went in favour of the Royal Air Force which was trying to hold the air space above the ships and which, in doing so, made no fewer than 2,500 sorties. Dieppe brought the Royal Navy and the Royal Air Force closer together and showed once more that air power permeates or, if you prefer it, binds together, land power and sea power. It was, on the whole, an unsuccessful raid. Many men were lost and the results were probably rather less than had been hoped ; but as an open demonstration that the lesson of the Scharnhorst, Gneisenau and Prinz Eugen had been learned it was of value.

During this raid attacks on ships were made on many occasions ; but at no time was there a sustained and comprehensive attack by enemy machines. Here and there enemy bombers, notably the Junkers 88, managed to deliver attacks and to do damage. German fighters also contrived to machine-gun smaller vessels, including air-sea rescue launches ; but the general picture was of an expanse of sea, close to enemy-held country, occupied by British ships, and covered by Royal Air Force aeroplanes. A point had been proved, namely that the Royal Air Force could at that range provide adequate air cover for landings, including landings not only of men, but also of some heavy equipment with tanks. It was also shown that heavy calls had to be made upon the fighter pilots in order to maintain the effective cover throughout the hours of daylight. These calls demonstrated the relationship between range and air cover. The German air force, working close to its bases, could put in a larger number of sorties per aircraft than the Royal Air Force ; for part of the flying time of every British Machine was occupied in moving to the battle area and then again in returning to base. It followed that the defence of a coastal point makes much lighter demands upon the air forces employed there than the attack. A large numerical superiority must be achieved before the attack can be expected to be fully effective.

The last action mentioned in the list given at the beginning of the chapter has not always received the notice it deserves. This is the expedition of United States and Australian troops to the Solomon Islands with the seizing of the air base at Guadalcanal. It merged with the concurrent operations in New Guinea aimed at Buna and Gona, and it provided an admirable model of three-element co-operation and of the permeation of land and sea power by air power. The Americans put in a large variety of aircraft types, including heavy, four-engined bombers like the Boeing Fortress, dive-bombers like the Douglas Dauntless and medium bombers like the North American Mitchell and the Martin Marauder. The Marauder was employed to carry torpedoes, which were slung outside the fuselage. Bristol Beauforts were also operating in the Pacific at this time and making many successful contributions to the effort against the Japanese.

The fighting for Guadalcanal was violent and it demanded not only strikes at the Japanese forces in the area, but also strikes at Japanese ships which sought with the greatest persistence, to reinforce the troops

on the island. It was partly because the allied airmen were so successful in dealing with Japanese warships and transports as they approached the island with reinforcements, that the small number of marines and other troops which made the first attack were able to hold on in the face of furious onslaughts until they could be adequately and then amply reinforced. In these operations the dive bomber played an important part. It was able to do what might have been difficult or impossible for the so-called "fighter-bomber," that is to batter the individual Japanese strong points, each of which was small in itself, but all of which combined provided formidable obstacles to the allied forces. The dive-bombers, through their combination of accuracy and blasting power, could produce the necessary destructive effect on these discrete strongholds. It is not here intended to enter the controversy about the merits of the dive-bomber; for feeling runs high on this subject and both sides tend to run their prejudices to such an extent as to over-reach reason and to make claims and accusations which could not be countenanced in a more sober appreciation. But it is evident that in the Pacific the dive-bomber has played a large part in several successful operations. It has done well at sea and on the land. Those who seek to deflect attention from these facts are not aiding in the correct orientation of our air development. The "fighter-bomber" has done magnificent work in the western desert and to mention the equally fine feats of the dive-bombers in the Pacific is not to discredit the work of the "fighter-bombers." Very special problems had to be tackled by the commanders in the Pacific and the operations at Guadalcanal, Tulagi, Gavutu and Tanbogo as well as the fine action against Japanese forces in Milne Bay, New Guinea, called for a wide variety of air operations and aircraft types. The applied air forces not only attended to the battle in the immediate vicinity of the land and sea forces with their fighters, dive-bombers and torpedo aircraft; but they also maintained a good reconnaissance service and long-range bombing on places farther afield. In the Pacific great distances were continually flown by United States Army bombers. Moreover, supplies had to be brought over huge areas of ocean. And while operations were proceeding in the southern Pacific those in the Aleutian Islands claimed continuous watchfulness and attention. It is to be recalled that the allied operations in the southern Pacific were begun with Australia under threat of early attack. On February 19, 1942, there had been the first big air attack on Darwin by the Japanese. Seventy-two twin-engined bombers had raided the place, with a fighter escort. In the afternoon twenty-one twin-engined bombers continued the attack and four were brought down. Mr. Curtin described the damage to property as "considerable," and there was a widespread impression that this was the preliminary to an invasion expedition. So during the year the tables were turned, or partly turned, and this must be attributed in large measure to the skilful use of all types of aircraft in this region.

Bombing raids were made on the Japanese at extremely long range by the four-engined machines; in November, for the first time in the Pacific area, United States infantry were flown to New Guinea to reinforce the Australians there, and this flight must be held to have had an important influence on the subsequent allied successes. And all the time the air war at sea was being waged with fighters, dive-bombers and torpedo carriers. United States Navy losses which, in the Midway battle which has already been discussed amounted to 35 torpedo aircraft out of 41, were often heavy. But at no time was there any relaxation in

the pressure on the enemy. If ever there was an area in which the proper employment of air power was difficult, it is the Pacific. The establishment of strategically correct air bases, the use of carriers, these and a thousand other matters were presenting their own special problems. It is in the circumstances unfortunate that it has not proved practicable to keep the British public as fully informed of the operations in the Pacific as of those in other battle areas. Even so what has emerged shows clearly that air power has been employed there with high skill and notable efficiency.

In this review of the air war at sea during 1942 some attempt has been made to delineate the pattern of events as they affected policy and technique. But the few outstanding actions selected as a basis for discussion were merely the end-products of numerous other small events and each of these, in their way, ministered to the improved understanding of the part that air must play in war. That has been the most encouraging feature of the year ; a quietening of the clamour of those who advocated that the air could do everything, a clearer view of the things that the air really can do for those who belittled it and, above all, a wider acceptance of the indivisibility of air power, sea power and land power with its innumerable implications. How futile now seem alike the theories of those who said that ships could do without aircraft, and of those who said that aircraft could do without ships when the grand picture of the air-sea struggle to pass the Malta convoy in August comes before the eyes in all its colours of heroism and resolution ! Perhaps the extremists have served their purpose, for they have forced others to clarify their views and so, in the end, led to balance. And now finally something must be added about the part of the Royal Air Force which works under the operational responsibility of the Admiralty, Coastal Command. A great deal of the work of this Command has been devoted to the fight against enemy submarines and I should be encroaching upon ground which is covered by specialists if I spoke about it in detail. But it is worth saying that this duty has brought into Coastal Command a large number of types of aircraft not formerly in it. Squadrons of Wellingtons and Whitleys, for instance, have been used as well as the Liberators and Catalinas. Hudsons are still prominent and they are joined now by Beauforts and, yet more recently, by Beaufighters. The urgent requirements of Coastal Command have had some effect in diminishing the forces available to Bomber Command for the direct assault upon Germany ; but that was a logical result of the priority of the war against U-boats. Not only has Bomber Command released some machines for employment by Coastal Command, but in addition Bomber Command itself has joined in the sea battle by undertaking a great many mine-laying operations, using a number of Hampden aircraft for this purpose.

In the Bay of Biscay anti-submarine air activity often mounted to considerable intensity. The Germans took notice of it and employed some of their Arado float-seaplanes for reconnaissance and other duties intended to damp it down. In countering the German counter-measures, the Beaufighters were found to be of the highest value for they could sweep the area clear of enemy machines without much difficulty, the Arado not being a particularly good aircraft in combat. Also active in countering the enemy submarines were the heavy bombers when these were assigned to specific tasks intended to damage the submarine bases, or the works which were known to be producing submarine components or equipment.

Of these raids a great number were undertaken during the year and, although it is known that the Germans take great pains to protect their U-boats and all their equipment and supplies, it is certain that the U-boat campaign was hampered—to what extent will only be determined much later—by these boldly executed and well-planned raids. To the raids planned by Bomber Command to damp down enemy submarine activity, there were added the raids of the Eighth United States Army Air Force based in Britain. This Air Force devoted some of its raids in the daylight to attacks on targets connected with the enemy's submarine activities.

Fighter Command also played its part in the offensive air war at sea. Employing its cannon carrying machines it conducted many attacks on enemy coastal shipping. Powerfully armed machines like the Beaufighter and the Hurricane IIC, were found to be of great value for this work. In the campaign in the Middle East fighters of these or similar types were able more than once to help markedly in the interruption of the supplies going to Field Marshal Rommel by sinking light craft such as lighters. It may be said, indeed, that every Command in the Royal Air Force, including of course the Flying Training and the Technical Training Commands, have rendered service of special note in this year of the war at sea. And inspiring that service has been this fuller and firmer understanding of the indivisibility of the three main forms of war making power, the powers of air, land and sea. That is really the great and satisfying sign of the year. The bickering and the arguments of the past have been at last resolved in a harmony of purpose which will not only give land and sea the full support of air, but, so doing, will also release and energise the power of air itself. No better portent could be conceived.

OLIVER STEWART.

CHAPTER V.

THE MODERN CONCEPTION OF SEA POWER.

An address delivered by Admiral Sir Herbert Richmond at the Royal Institute of International Affairs on Thursday, November 26, 1942. Reproduced by permission of the Council.

THE modern conception of sea power, as it appears in the speeches of Ministers, in the columns of the Press and in many writings on "sea power" and "air power," differs in a most marked and fundamental manner from the conception of the great thinker who originated, or at least popularised and resurrected, the expression. This new meaning lacks both the breadth and sweep which made Mahan's work so epoch-making and differentiated it from all the earlier writings on naval affairs. This difference between Mahan's meaning of the word sea power and that of these writers and speakers who now, in my opinion, misuse the term, is this: that while he interpreted it in the objective sense of the ultimate object which sea power achieves, the modern interpretation with which I join issue is subjective, and refers to the narrower sphere of the material instrument with which that object is attained; and in so doing takes account only of one of the types of material, excluding other types which, as everyone who has eyes to see is aware, play a great part in the attainment.

I feel confident that I interpret Mahan correctly. Since I bought his first book just fifty years ago it has accompanied me wherever I have been, afloat and ashore. It is now a thumbed and tattered volume, disfigured with marginal notes. I do not, however, shelter myself under the umbrella of a great name or make an appeal solely to authority. As it is the duty of everyone who professes to hold an opinion I have formed my own, and it is that opinion that I propose to assert; but as I quote Mahan and claim his support for my views I may properly be called upon to substantiate that claim and the claim for my assumption that he meant what I say he meant.

What then is the meaning of the expression "sea power"?

Humpty Dumpty, on a certain memorable occasion with which every one is familiar, told Alice that "When I use a word it means just what I choose it to mean and nothing more." That is a very happy attitude to adopt, and it seems to be the attitude of the new school regarding the meaning of the phrase "sea power." It suffers, however, from the handicap that, though a thing may be called by a certain name it does not follow that it thereby becomes that which it is called. Abraham Lincoln's remark that though one might call a sheep's tail a "leg," in actual fact the sheep would still be a four-legged animal is to the point.

In the modern meaning that is daily being given to "sea power," this method of Humpty Dumpty is applied. The term is used to mean "strength in fighting ships of the surface and submarine types," as though those and those alone constituted "sea power." They are not, and they and their predecessors never have been, the whole of sea power. They are a part, and an essential part, or an element of sea power; and they do not comprise the whole of even the material used in the prosecution of sea warfare, for they omit one set of units which is playing a

highly important part in war at sea and will in the future play an even more extensive part, namely aircraft. One does not make a part into a whole by calling it so any more than Lincoln's four-legged sheep became a five-legged one by the simple expedient of calling its tail a leg.

The operations of war at sea are conducted with a great variety of "instruments," and those instruments have undergone successions of changes. At one time they consisted of oar-propelled galleys armed with rams, and fought with swords, spears and arrows. At another, of sail-propelled ships without rams, fought with guns on the broadside. At another, with steam-propelled ships with rams and turrets and armour; and to these the infernal skill of man added torpedo carrying vessels, first on the surface then under the surface. Finally there came another kind of sea-fighting instrument, the aeroplane. In those times of transition no one dreamed of speaking of "surface ship power" or "submarine power" as distinct from "sea power." Both types were types of the instruments of sea power, and so it is with the latest addition to the naval family. President Roosevelt expressed this with equal accuracy and simplicity when he said, at his fireside chat on May 26, 1940, that America "could not have adequate naval defence without ships, ships that sail on the surface of the ocean, ships that move under the surface and ships that fly." And later: "In sea operations the aircraft is just as much an integral part of the unity of operations as the submarine, the destroyer and the battleship. The fleet that has 'planes is going to beat an equal fleet without 'planes." You will observe that the President makes no differentiation between 'planes that fly from shipboard and 'planes that fly from land. What the fleet needs is the 'planes, and this is irrespective of whether they are ship-based or shore-based. It is indeed strange that we, who plume ourselves on being a maritime nation, and knowing something about sea warfare, have been unable to understand this extremely elementary fact.

We, in the persons of our Ministers and others whom I have mentioned, differentiate between these two classes of fighting ships. We speak of "sea power" and "air power" as though they were two separate and distinct things in the national cosmos. Thus on November 1 the Home Secretary told his audience that we are "in increasing measure adding air power to sea power." What he meant was we are adding aircraft to the forces fighting at sea and they are playing an increasing part in sea warfare, just as destroyers some years ago, and after them submarines, were added to our sea forces and played an increasing part in the fighting. He said also that we should remember that sea power and air power "could impose uncertainty on the enemy," whereas that which imposes uncertainty on the enemy is the possession of control of the sea; and it is that control of the sea that is the ultimate object of sea power. If Mr. Morrison had said that the combined use of ships of all types capable of fighting at sea produced this situation, and so placed the enemy in uncertainty as to where a blow would be struck, no objection could be taken; or if, as Mommsen did in his history of Rome, he had spoken of "naval power combined with air power" producing this effect, the only objection would have been the failure to recognise aircraft as units of naval power, though it would have had some justification in view of the present organisation of our fighting forces. "Sea power," was, however, a misnomer, just as it was a misuse of the term to say that "Japan's *blitzkrieg* in the Pacific" was "based on sea and air power combined."

In the old meaning of the words, that campaign was based on Japan's sea power, though again it would have been admissible to say that it was based on the combined use of naval and air forces; though this would not have found acceptance in either Japan or the United States, in both of whose navies the air units are integral, inseparable and indistinguishable from the other units of the navies on and under the surface, and even so it might equally well have been said that it was based on "battleship, cruiser and destroyer power combined."

Another Minister, the First Lord of the Admiralty, whom we should expect, from the office he holds, to understand the true meaning of sea power, made his contribution to the confusion in a speech on November 17. "In discussions as to whether sea power or air power was the thing of the future," he said, "we should never forget that the Axis Powers had gambled on their theory that air power could defeat the sea power of Britain." He might with equal inaccuracy have said that in 1917 Germany gambled on her theory that submarine power could defeat the sea power of Britain. There were, indeed, at that time some foolish and uninstructed people who did so talk, failing to recognise that the submarine is an instrument of sea power even though she navigates under the sea. But they saw their error in due time.

In all these references the phrase "sea power" is being used in a novel and narrow sense, not in the wider objective sense in which it was brought into use by Mahan—"the strength or efficiency of a state or nation for maritime warfare"; its ability, that is to say, to fulfil the ultimate objects of war at sea. I say without qualification that this is wrong. I say with equal assurance that this differentiation between vessels that fly and vessels which float and swim has been responsible for many of the misfortunes that have attended us in the present war.

Let me return to the meaning which Mahan attached to the expression sea power. He says that in reading Mommsen's history of the Punic Wars he observed that the historian attributed the outcome of those wars to "naval power." Mahan saw that while naval power, in the material form of ships, was the instrument of victory, it was the control of the sea which was the determining cause; and the ships were one, but not the whole, of the elements which gave Rome the command of the sea. The ultimate aim, therefore, of sea power, as he used the phrase, was control of the sea and that control could be achieved only if all the constituent elements of strength at sea were present. So his first book was intended to be devoted to "a consideration of the sources of sea power, commercial, military, geographical, bases, colonies and aptitude." Sea power, in other words, is not naval strength, as our modern interpreters suppose, but naval strength is one, and certainly the most important, of the constituents of that larger thing, sea power.

If anyone questions that this was Mahan's meaning he has only to read the opening chapters of "The Influence of Sea Power." In those chapters he made it clear beyond all possible doubt that the ultimate object of sea power is the control of the sea and that it is in the possession of that control which makes sea power so potent an influence in war. Thus he says of Rome that she, "by her sea power, controlled the basin between Italy, Sicily and Spain," that water space, the control of which to-day is of such outstanding importance in our vital struggle. The function, the ultimate object which Roman sea power fulfilled and achieved, was the control of those waters; and the meaning of sea power

as he used the phrase was the ability which Rome possessed to send her armies and maintain them across that stretch of water. He illustrated his thesis by pointing out that had the Mediterranean been a level desert with strong positions on its borders in the present coasts and islands, and had the Romans possessed "an armed force capable by its character of traversing that desert at will," a force that the enemy could not effectively oppose, no words would have been too strong to express the value of that "peculiar" force. He does not discriminate between the types of the arms or their means of locomotion; whether they should be cavalry, infantry, chariots or camel-borne. The capacity to control the supposititious desert would have resided in the possession of instruments and men of war apt to the purpose of the kind of warfare that would arise, trained to the duties, of positions from which they could act and of the means of transport of the needs of the force. Power, as he interpreted it in this connotation, is ability to achieve the end in view.

The distinction that our present day users of the word "sea power" make between naval and air forces, has its origin, as it seems to me, in the meaning they attach to the word "power." That word as we are all aware, may mean either a quality, the ability to do or to effect something, or the material strength by means of which that "something" is done. Both, needless to say are, linguistically speaking, proper, but in this matter of sea power there is a profound and most important difference between them and it matters very greatly to the people of this sea empire of ours, dependent as it is upon the control of the sea, which of those meanings we adopt. This is neither pedantic philology nor academic hair splitting, still less is it a matter of petty jealousy or pride. To ask for precision in the use of words is to be severely practical. It is, I think you will agree, not open to discussion that precision in the use of words is an essential preliminary to accuracy of thought, and accuracy of thought the preliminary to correctness of policy and action.

The proper approach to any problem of a practical nature is, I suggest, the objective one. The first thing to be done is to determine and to define the ultimate object one has in view, and thereafter to maintain a clear distinction between the end and the means by which it is attained. Ends, Aristotle tells us, differ. Sometimes the action itself constitutes the end, sometimes there is something beyond that has to be accomplished by the action which is the thing sought, the ulterior and final object. If, therefore, we are to consider what constitutes sea power we must, as Mahan did, decide what ultimate end sea power exists to attain.

HISTORY THE GUIDE.

History is a true source of enlightenment. It can tell us what sea power is, what it has done at different times and in what it consists. What has been the ultimate object of sea power throughout the two thousand odd years in which it has figured in war? We can quickly see these things in its pages and how, whatever may have been the actual instruments used at different periods, it was never the instruments alone which constituted sea power.

Time will not allow me to run through the long history of the objects of sea power throughout the many ages and wars from ancient Greece to the reign of King George VI. In a word, all these periods, different though the conditions and the weapons have been, all the struggles at

sea tell the same tale—the Peloponesian war, the wars of Rome, of the Eastern Roman Empire, of Elizabeth, the Commonwealth, the later Stuarts, Anne and the eighteenth century, up to what is happening at this very hour of this very afternoon. The object of sea power has been to control the sea, and he who controlled the sea was able to send his own armies and his goods across it and to prevent his enemy from doing the same. Because of the effects of these military expeditions and of the needs and uses of the various goods upon the courses of the war, sea power has been an influence in war.

Sea power, in all those wars, was effective or lacking in full effectiveness according to the extent to which it was capable of attaining those two ends. Its capacity to attain those ends depended, whatever might be the type of vessel employed or the means of its propulsion, upon the degree to which all the needs of sea power were fulfilled; in other words to whether all the elements of sea power were present and effective.

THE THREE ELEMENTS.

What are those elements? They are three, in the material sense. There is, of course, the personal element, but that I do not propose to discuss, vast as its importance is; for it does not need discussion except in one particular which I shall mention. They are: (1) fighting instruments capable of taking part in the direct operation at sea of overcoming the resistance of the enemy and shepherding the merchantmen or carrier of goods or men. (2) Positions from which those instruments can work effectively and in which they can find their needs attended to. (3) Shipping capable of transporting men and goods, and behind that and supporting it and the fighting fleet, an industry—shipbuilding.

Taking these in turn. The need of the first is obvious. What is less obvious, it seems, is that it is quite immaterial what form they take: oar propelled, sail propelled, steam propelled, on the surface, under the surface or above the surface, armed with bows and arrows, guns, torpedoes, depth charges, bombs or any other agent of destruction, those weapon-carrying vessels are the instruments which achieve the end of sea power by destroying the opposing forces at sea and by that means obtain command of the sea and exercise control. Every day that passes is demonstrating this to every one who is not too blind to see. Cast your memories back to an event some months ago. The battleship *Bismarck* was lying in a Norwegian port. Her departure was discovered and reported by a shore-based aircraft; she was located in the Greenland strait by cruisers; she was attacked by battleships; escaping, she was lost sight of but was found by a ship-borne aircraft and wounded; she was again lost, but refound by a shore-based flying boat; battleships, cruisers and destroyers hastened from all directions to the scene; she was reduced to a wreck by the battleships' guns and finally sunk by the torpedoes of a cruiser. All arms were engaged. Were not all of these the instruments of sea power?

Turn to whatever theatre of war you may and you find the same tale. In the Pacific we see three great sea battles; in the Coral Sea, off Midway Island and off Guadalcanal. In each all of these types are present. True, the first two battles were affairs of outposts; the advanced guards and aircraft only got into action, but the losses inflicted were such that close action was avoided. The actions were indecisive in that the enemy

was not destroyed ; but he was prevented from achieving the purpose for which he had set out, the landing of an army in New Caledonia or on the coast of Australia, the capture of Midway Island certainly, and of Hawaii possibly. In the last, the recapture and complete possession of Guadalcanal. For what purpose does or did he need those islands ? As bases for his navy from which it could exercise the control of the sea, extend his military conquests in the Pacific, and hold them against all attempts to expel him till, wearied and impotent to expel him, his enemies give up the attempt and accept their loss ; that is, defeat.

Turn to operations on a less majestic scale. Germany needs to use the sea routes along the coast of western Europe to supply her armies and her sea forces in the countries she has invaded, Norway, Holland, Denmark, France. Road, rail, river and canal are glutted with traffic, and transport is short. The needs must be supplied by other lines of communication than the inland routes. They try to send the goods by sea. How do we dispute their passage and seek to control that traffic ? We use out light forces of all kinds that are capable of operating at sea against the carriers of these much needed goods ; destroyers, submarines, motor gunboats, motor torpedo boats, torpedo boats, torpedo and bomb carrying aircraft, mines laid by surface and air minelayers. This is sea power in the working. These are the lineal descendants of the brigs and cutters, the sloops, corvettes and rowboats of the fleet, which, in the Napoleonic wars cut out the coasting vessels which were trying to supply the fleet at Brest with its needs. The timber and spars, the hemp and copper that then came from the northern countries, the salt provisions that came from the interior by way of the Loire and Garonne, could only make the final stage of their journey to the naval base by the coastal route, but because of the efficiency of the control they did not reach their destination, Brest dockyard and the great ships that required them, with the result that those ships were largely immobilised. Brest ceased to be a base of major operations. It was sea power exercised by these vessels and craft that produced this result. It is sea power exercised by its descendants that does the same to-day. Do not discriminate between one type and another and say that control is exercised by " destroyer power " aided by " motor boat power " and " submarine power " ; but for some wholly illogical and strategically incorrect reason those who conceive sea power in modern terms speak separately of air power.

And so I could continue over the whole broad range of the war at sea. It is such control of the sea as we possess with our sea power that enables us to send tanks and munitions to Russia by way of Murmansk, fighting the way through the opposition of big ships, cruisers, destroyers, motor boats, submarines, aircraft and mines. Why pick out of these one for separate treatment ? All work, or should work, together on a common plan, each doing that which it is best fitted to do. If Mahan were with us can there be an iota of doubt as to whether he would call this a demonstration of sea power ? Again, five hundred transports cross the ocean, carrying armies from Britain and America to North Africa. That which enables this great oversea invasion to be carried through is sea power. There is control of the sea. The army of the Nile is reinforced and its strength nourished by men and munitions that have made a 14,000 mile voyage round the Cape. At some stages of that voyage it is guarded by one type of vessel, at another by other types. The several fighting vessels and craft which give this direct protection are the instruments of sea

power ; the instruments which achieve that final object of enabling ships transporting troops and trade to cross the sea and reach their destinations.

BASES.

These fighting vessels, though instruments of sea power, do not constitute the whole of sea power. They are one and an indispensable one, of its elements. They could not do that which they exist to do without bases. The story of sea warfare, of the eternal struggle to command and control the sea in war, is one long record of the need of bases, of the impotence, the limitation of the power of ships without them. War, Napoleon said, is a business of positions. He was thinking of land war, but the saying is equally true of war at sea. One reason why Queen Elizabeth's war lasted eighteen years and in all that time never succeeded in doing that which her statesmen wished to do, cripple Spain completely by preventing her from receiving the bullion on which her power of conducting war was assumed to depend, was that England had no bases outside the Kingdom from which it could keep a continual watch on the Spanish fleet and the treasure fleets from the Indies. Cromwell found that he needed a base in the Straits mouth in order to exercise influence in the Mediterranean and protect the Commonwealth's growing shipping with the Italian States and the Levant, so he sends his officer to discover whether Gibraltar, Oran, Bougie, Ceuta or Buzema can be taken—the ports whose possession to-day is, we hope, to enable us to protect our shipping through the western basin of the Mediterranean. Queen Anne's navy could only make short-lived appearances in the same sea till it had bases which enabled it to stay upon the station from years' end to years' end ; first the use of Lisbon in 1703, Gibraltar taken in 1704, Minorca taken in 1708. The modern analogy is the inability of our patrol craft in the sky and on the sea to maintain a continuous watch on the line of passage of the reinforcements going to the Axis army in Libya and now in Tunis, owing to the distance of their base from that line. We nearly lost India in 1782 because we had lost our base, Trincomali. Our operations in North America in Rodney's time were hampered, as he wrote, by the loss of Rhode Island. If we should have been driven from Alexandria in this war it is plain that we should have lost control of the Eastern Mediterranean, our sea power would have been ineffective. It is equally plain what Malta means in relation to that object of sea power, the control of the sea. The measure of its importance is to be seen in the 2,000 or more attacks, and the thousands of aircraft losses accepted, in order to deprive us of this element of our sea power. Indeed, does not the whole theatre of the war at sea testify to the same thing, the essentiality of our possession of Gibraltar, Sierra Leone, Bermuda, Simons Town, Trincomali, Mauritius, Aden, Mombasa, Madagascar, and for what other reason than the establishment of control of the South Pacific in this savage battle being fought for the possession of Guadalcanal ? Is not the latest acquisition to the allied sea power, Dakar, of signal importance ? Now, in the face of these surely self-evident facts can anyone speak of " sea power " as though it consisted solely of fighting ships—and a part only of them, those on and under the surface ?



Naval help to the Army. Landing supplies for the Eighth Army.

(Official Photograph. Crown copyright reserved.)



The convoy bound for North Africa.
(Official Photograph. Crown copyright reserved.)

SHIPPING.

Here then are two elements of sea power : fighting instruments of all kinds capable of direct action in the operations at sea and the bases without which they cannot take part in those operations. With these, the sea can be controlled, the enemy can be deprived of the benefit of its use in war. That, however, is an incomplete expression of sea power. It is not enough merely to deprive the opponent of the use of the sea. It is necessary also to be able to use it oneself, to send our own armies to protect our possessions, help our allies, supply them with those thousands of tanks, aircraft, lorries and other munitions which seem to be so lightly considered when we are told that the aid we give them is inadequate : to reinforce our bases, to deprive the enemy of his, to bring us the food and raw materials without which we can neither live nor fight—all of these are the necessary tasks of sea power. There is one means only by which those troops and that trade can be sent to their destinations in the quantities necessary : ships. Maybe in the future a proportion larger than that of to-day will travel by air, but the bulky cargoes of grain and timber, meat and oil, coal and iron and various essential ores can only be carried in ships for a long time to come. Therefore, for the purposes of obtaining the victory at sea and of exploiting victory by its use, sea power needs shipping. Without shipping the victory would be sterile unless it were possible to reduce a great continental Power to submission by blockade ; and that, as we all know from experience, is impossible. Shipping is therefore a third indispensable element of sea power and linked with it that which produces, maintains and replaces it, a ship-building industry. The actual volume of shipping is, moreover, a factor of the highest importance, for on it depends the staying power, the capacity to take punishment without succumbing to the blows and losses which, even when the command and control are at their highest as they were after Trafalgar, for instance, it is exposed. It was because we possessed so great a volume of shipping in those critical months of 1917 and 1918 when our fate hung in the balance and our survival seemed to many, even in the highest rank in the navy, improbable, that our shipping was able to stand the losses. And our power to replace them was not less vital. Shipping tonnage is analogous to the staying power, the condition, of a boxer. How greatly shipping affects our ability to make use of our fighting superiority at sea at the present time is only too obvious. Our ability is limited by the tonnage available. Japan has, till recently, possessed two of the elements of sea power, in the superiority of her naval forces, composed of the three types defined by the President and the bases she has acquired, but she does not possess either the volume of shipping of the allies or the means they have of replacement. The work of the American submarines and other vessels is not likely to prove less deadly to Japan's shipping than that of the Axis to our own, and if her losses reach the scale that it is not over-optimistic to expect, Japan's sea power, in its true definition of ability to use the sea, will be crippled.

These three things, fighting ships, bases and a numerous and well-manned shipping industry with the resources of shipbuilding behind it, are then indisputably the elements of sea power to-day ; as they always, at all periods of the world's history have been the elements. Sea power may be said to resemble a three legged stool standing on these three supports. Take one away and the stool will fall.

How then have those who conduct our national affairs during the last score or so of years since the end of the "First World War" cultivated and maintained the sea power which had been the basis of British security in the past?

THE DECLINE OF BRITISH SEA POWER.

They began by weakening it in its first element of fighting ships. They abandoned the policy of the "Two Power Standard" in battleships, affirmed in 1888, itself only a reaffirmation of the British policy throughout the eighteenth century since the Bourbon alliance in 1737. They decided to pretend that it is possible to defend a Two Hemisphere Empire with a less than One Power navy. Both the British and the Australasian Governments rejected the proposal to meet the menace of Japan as Lord Jellicoe had recommended, apprehensive though the latter have continuously shown themselves, and, as events have shown, with good reason, that Britain's difficulties in Europe would be Japan's opportunity in the Far East. As to our cruisers, they deliberately departed from the principle, regarded by generations of experienced seamen as axiomatic, that the number of our cruisers is not a relative, but an absolute quantity, depending, that is to say, not upon the numbers of a possible enemy, but upon the extent of the duties they will be needed to perform. Here, for example, are some words of Admiral Lord Exmouth, a great frigate captain in his day and commanding the squadron in the East Indies in 1810, when we had been losing heavily in our Calcutta trade. Called on by the Admiralty to report what sea forces were required in these seas he wrote, *inter alia* "The Board must be aware that a calculation of the entire force required to be employed in India *must not be founded on the numbers of the enemy.*" Nothing could be more explicit; it was the accepted doctrine. It was based on experience and common sense. Eighty or so years later another great sea officer, Admiral Hornby, enunciated the same doctrine under the changed circumstances created by the steam-driven ship. His calculation gave our needs as 186 cruisers, a figure, curiously enough almost exactly that of the combined cruiser and armed vessel force in the war of 1914-18. Our rulers, however, in 1931, knew better than any Exmouth or Hornby. They affirmed the precisely opposite doctrine, that the cruiser numbers of our needs are a relative matter, depending on the numbers of another Power. They reduced the number to fifty, a bare third of what had been needed in our recent struggle for existence. On the same lack of principle they declared our need of flotilla strength to depend on the number of submarines of an enemy, which, as all instructed persons know, it never did, even if the destroying of submarines were the only duty of destroyers which it had not been in the late war and, as we see daily in the present war it is not: and these maids-of-all-work were cut down to a third of the number that had only just saved us in 1917-18. In the same element of sea power they deprived the Navy of one of its arms, its air service, a force that had grown under the impelling need of modern war at sea, as we have seen, to 2,800 machines and 55,000 men. While the Navy was thus being emasculated in the element of fighting ships, an attempt was made to stop the building of the base at Singapore; and loose talk was indulged in by people who imagined themselves "advanced thinkers and realists" advocating the giving up of Malta and Gibraltar, the former was said to be no longer any use in consequence of the threat of the air from Italy,

the latter because Spain dislikes seeing Britain in that position, as Senor Maura and Primo de Rivera had shown. We can see to-day whether those bases could have been dispensed with. But we dispensed with the bases in Ireland of which the Admiralty had said at the time of the Irish Treaty that without their use it would be difficult, perhaps impossible, to feed the island in time of war: a cession that has cost us thousands of tons of shipping, of lives of seamen and of tons of cargoes. It is true that the building of Singapore was continued, though not because of its importance, but because it would have cost more to cancel the contracts than to fulfil them. Aerodromes also were built, but as there were neither ships to use the naval base nor aircraft to use the aerodromes, they merely served the purposes of the enemy who found these conveniences ready made for their use. Sentry boxes without sentries in them are of no practical value whatever.

Finally, in the third element of sea power, shipping and shipbuilding, nothing was done to check the decline that foreign competition was causing. In 1914 the United Kingdom owned 2,918 deep sea trading ships. In 1936 this figure had fallen to 2,164, a fall of 25 per cent.; the seamen fell from 196,000 to 160,000, the fishermen from 76,000 to 50,000, and between 1919 and 1938 the men employed in shipbuilding and repairing from 294,000 to 175,000.*

Thus in all its three elements British sea power was allowed to dwindle. The contrast between this supine neglect and the energy of our ancestors as represented by a long succession of Navigation Acts beginning in the reign of Richard III furnishes a measure of the want of understanding of either the importance or of the meaning, or both, of sea power and of the elements of which it is composed.

THE RESULTS OF NEGLECT.

The result of this neglect or blindness has been brought home in telling fashion during this war. The misfortunes we have suffered in the losses of fighting ships, merchant shipping and colonial possessions with all their valuable products and the strategical positions they occupy, in the delays which these losses have imposed on the development of our offensive, are, with the exception of the defeat in France, due to the shortcomings in our sea power; as the failure of France to appreciate the strength and potentialities of sea power made her think that all was lost when Paris was threatened and her armies beaten, though far from destroyed. To add to this there has been the failure to act on the old and well proven principle of British strategy that the first object of the combined fighting forces of a maritime nation should be to obtain the command of the sea. What nation, realizing that, appreciating the importance of command of the sea, and of the Mediterranean sea in particular, understanding that command depends on sea power and that sea power demands the possession of bases, would have failed, in the seven months of its occupation of Crete to take every possible step to render that island impregnable, or have excused that neglect on grounds that there were more pressing demands elsewhere than the static and active needs of its defence?

The narrow interpretation of the term sea power which had led to one part of the fighting forces which take part in the operations of sea warfare

* Sir Westcott Abell. "Merchant Sea Power, 1919-1939." The Andrew Laing Lecture at Newcastle-on-Tyne, October 31, 1941.

being segregated from the other parts is in direct opposition to the principle which most of us have had drummed into us from our youth—the principle of liaison of arms ; and it has had the result which neglects or defiance of that principle have always had—inefficiency : the inefficiency of the engineers of the army in the eighteenth century, when they formed a corps separate from and independent of the army of the day is familiar to every military student of those wars in which that condition existed. We in the Navy have suffered from the same insidious disease. In my young days forty-five years ago there was a gulf between the gunnery and and torpedo specialists. The gunnery men despised the torpedo as a weapon, the torpedo men reciprocated. Each “ crabbed ” the other’s weapon. And what was the result ? It was, in two words : tactics suffered. Battle, in the eyes of the gunnery specialist, was to be a great gunnery duel ; it was to be won by the artillery alone, not by the combined and co-ordinated action of all arms, the ships of the line, the cruiser forces and the torpedo flotilla. To the two latter the purely defensive function was assigned of preventing the enemy flotillas from disturbing the gunfire of the great ships of the line of battle. So, though our battle fleet was double the strength in broadside force of that of the enemy and our flotilla outnumbered theirs, the battle at Jutland was indecisive. The flotilla effected nothing, not even its negative task of enabling the big ships to complete their destruction without interference. The great ships had to turn away, the very thing that was to be prevented. The reason was to a great extent that the flotillas had been treated as separate formations and not as they had been in the German Navy, as integral elements of the battle fleet, for over a score of years. I had discussed their combined tactics with the Captain of the Kiel flotilla in 1897. It was largely, I do not say wholly, because of this watertight segregation that the offensive potentialities of our torpedo flotilla had been underestimated or condemned. There was a lack of common outlook and of liaison of arms.

The same thing happened when the submarine appeared. She, in her turn, was kept in segregation. During the two years in which I commanded the Dreadnought as flagship of the Home Fleet from 1909 to 1911 the fleet saw nothing of submarines and a proposal to associate them in their training with the fleet was rejected. It is no exaggeration to say that this segregation was one of the principal causes of the want of understanding of the potentialities of the submarine, and therefore of the lack of precautions against her. The fleet was never escorted by the light craft, the harbours it was intended to use in war, Scapa Flow and the Forth, had no anti-submarine defences, none but the crudest appliances had been developed for attacking submarines. So little was known of the developments of these underwater craft that it was believed that the difficulties of navigation, tides, intricate channels and so forth, were in themselves a sufficient defence to the Fleet bases, that it was impossible for submarines to worm their way into those anchorages ; and I remember the suggestion being made by a young officer of Marines of my acquaintance more than a year before the war, that this estimate, made many years earlier, should be re-examined ; a suggestion that was rejected—how could a mere marine know better than the Admiralty ? Nothing was done. The bases were still undefended when war broke out and extemporised defences had to be created, but while they were being devised and made the Grand Fleet was hiding like a rabbit in secret

lochs "somewhere in Scotland." Segregation and separation were the parents of ignorance and unpreparedness.

Unwarned by these experiences of separating one arm from the remainder, a similar segregation was imposed upon the new naval weapon in the air. Precisely as in the same manner as in those other cases of segregation I have mentioned, the liaison between the three arms on, under and above the surface was lacking. A spirit of competition and mutual depreciation was engendered. The potentialities of the air arm working in combination with the other arms were not explored, as the potentialities of combination with the surface and submarine arms had not been explored; and it is in a great measure owing to this separation that there has been weakness, both quantitatively and qualitatively in the air arm at sea. That, however, is not all. When, after a long time and against a determined opposition, it was recognised that a return to the Navy of its air arm was necessary, that return was partial. A distinction was made between those craft which are ship-borne and those which are shore-based, a distinction that has no basis whatever either in strategy or tactics, still less in logic. The ultimate aim of sea power, the true meaning of the expression were not understood. The facts that that ultimate aim is the control of the sea and that all those fighting instruments that are employed directly in its attainment are naval, was either denied or ignored in this policy. The base from which a vessel starts is immaterial. Every naval unit starts from a shore base, whether she is a battleship, a destroyer or a 56-foot motor boat. Because of this highly unscientific allocation we saw, for some months after the outbreak of war, two separate forces operating to the westward for the purpose of the defence of shipping, each working on its own lines, unco-ordinated, and methods being employed that were futile in the highest degree. At length both were placed under the same command, but though this may serve as an *ad hoc* measure it is wrong in principle and will create great difficulties in the future. The Americans discovered the need for unity of command in the operations at sea against the entrances along their coasts more quickly than we did. By a decree in March, 1941, the army 'planes and navy 'planes were placed under naval command.

FUTURE ORGANISATION.

Apart from questions of what may be called "theory," there is a serious "practical" aspect of the question of whether this differentiation between ships and aircraft is to continue. It is clear that range and powers of aircraft are going greatly to extend, and that many of the duties hitherto carried out by surface vessels will be carried out either by aircraft working from shore bases or by the combined use of surface and aircraft. The defence of trade is a great responsibility which must rest upon the shoulders of one authority. I do not regard it as practicable or possible to divide that responsibility. When Pitt said he would be responsible for nothing that he did not direct he was giving expression to a sound and fundamental principle of government and administration. Those to whom that responsibility falls have the duty of preparing the plans and providing and allotting the forces in peace. They must be acquainted with the shipping routes, the resources, the seasons, the shipping employed, with, in fact, all that mass of business which is concerned with supplying the needs of the Empire and distributing its products. Knowing what the

requirements are, knowing the harbours and the navigational factors, they can proceed to make the calculations and dispositions for the defence in war. It will, I imagine, be readily agreed that the persons best suited to this work are seamen, and even our own seamen of the Navy are aware that they have a good deal to learn before they can fulfil that duty adequately. It seems, therefore, proper to assume that it will be the Admiralty who, in the future, will be the Department responsible for the security of the trade routes and shipping, and the Admirals who command on the foreign stations who will as heretofore be responsible for the strategy and planning of the defence.

A part of that problem falls to a modern Commander-in-Chief. When, some twenty years ago, I commanded in the East Indies, I had first to acquaint myself with the shipping routes, ports, nature of exports and imports, coastal trade and the degree of importance it held in the Indian system of distribution and so forth, and, with this information and knowledge of the forces and ports of potential enemies, to see what there was to be done, how it was best to do it, and the forces that would be needed; where convoys would be the most effective and economical means, where patrolling would serve. Then, surface ships, cruisers and sloops, were the only types; to-day a Commander-in-Chief would have to bring aircraft into his calculations. They would be an integral part of his forces operating largely from shore bases. Undoubtedly he would need them for patrols in some areas, for convoy escorts both on the ocean and for work on the coastal routes. It would be impossible for a commander either to frame plans or to make the calculations necessary unless he had an assurance that the forces would be available; and the efficiency of those forces would depend upon the experience and training they had had in the tasks they were to perform. What is true on the small scale of a foreign squadron is true also on the larger scale of the navy as a whole. The Admiralty of to-day and to-morrow cannot calculate its "global" requirements if one of the classes of fighting craft that will have to take part in the operations is not a part of its forces nor under its jurisdiction. So long, however, as "power" is interpreted in terms of material, and we talk and think of "sea power" and "air power" as two separate things instead of considering the problem in the light of the ultimate object that it has to achieve, we shall have this anomalous situation and our forces at sea will be inadequate in numbers and types. Nothing more uneconomical, in the full sense of that word, could be imagined.

THE ULTIMATE OBJECT.

In conclusion, let me forestall one of the many criticisms that I shall have invited; that while I have stressed the need for thinking of the ultimate object I have failed to do that very thing myself, and have stopped short of the ultimate object in war. What I have been concerned with is the ultimate object of sea power, and that I hold to be the control of the sea. But I am well alive to the fact that control of the sea is not an end in itself. It, in turn, is a means to an end, and that end is the overcoming of the resistance of the enemy; an end attained by either assault on him within his own country, using whatever is the most effective and economical means; which may be invasion by land forces or bombardment by air forces or a combination of the two; by siege, cutting off his means of making war, or again a combination of assault and siege.

One of the functions of sea power is to sweep the road clear for the passage of the armies. That is the first and indispensable step, for one can no more send a great army across an insecure sea than one can send men across an insecure bridge that will not bear their weight. That, however, does not mean that no military movements can be made until complete command and control have been won; but until there is a sufficient control on the line of passage. Military movements are absolutely necessary to enable control to be exercised, for unless positions are held the fleet cannot operate. Bases, as I have repeated, are an essential element of sea power. The campaigns in the Mediterranean furnish a most admirable example of the inter-relation of land and sea operations. If the army had been unable to hold Egypt in 1940, the fleet could not have stayed in the Levant. If the fleet had had to leave the army would have been overwhelmed by the superior forces the enemy could have sent across the sea from Italy. So the first task of the land forces was to hold the bases, and of the sea forces to bring reinforcements to the army. But as the army could not, until this last campaign, hold positions westward of Alexandria, the sea forces could not maintain the constant watch in superior force on the enemy line of communications between Sicily and Africa. The appearances of our sea-fighting forces of all kinds could be intermittent only from want of bases close enough to the enemy's lines of passage and he was able to send strong forces to replace his losses and drive us back, exactly as the appearances of Queen Anne's fleet on the line of communication between Toulon and Barcelona could only be intermittent until we had bases in the Mediterranean. Now, sea power in two of its elements, fighting vessels and transport vessels, has enabled two armies, one from the United States and one from Britain, to reach Africa, and these armies are engaged in adding the third element to sea power in the Mediterranean; bases along the north African coast. With fighting strength in all its forms at sea and the bases it needs a step will have been taken towards attaining the object of sea power up the straits, command and control; and the movement of military forces in safety from south to north and from west to east will, we may hope, become possible; control is a step towards that end. That, of course, is still not an end; it is the means to an end, crushing the enemy in his European fortress. Even that is not an end. As more than one writer since Aristotle has said, victory itself is not the ultimate object of war: which is peace. But to reach that ultimate object we must proceed step by step: there are no short cuts. We must be clear as to the object in each step and of each step, and while in each stage, must concentrate every effort upon the attainment of the object of that stage. The object in the present stage is to obtain control of the sea. We have not yet got that control either in the Atlantic, the Mediterranean or the Pacific, and it is to sea power, in its three elements of fighting ships that move on, under and above the surface of the sea, merchant ships and bases, that we must look to gain and to recover the command and control. My talk is referred to in the Institute's notice as "the modern conception of sea power." Actually, the conception I have put before you is not modern; it is the oldest of all conceptions. It is at least two thousand five hundred years old. It is to that old conception that I wish to return.

H. W. RICHMOND.

CHAPTER VI.

THE U-BOAT WAR.

IF warnings were enough we ought to be under no illusion about the seriousness of the U-boat war. The Prime Minister told us in December, 1942, that the U-boat war is not diminishing but growing, and that the situation might grow worse before it got better. Lord Woolton has said that we must draw our belts still tighter, and Hitler has openly proclaimed that the U-boat campaign is to be one of the chief weapons for our defeat. Yet it is not easy for the public to realize the scale and weight of the attack. Our own government publishes no figures of the sinkings of merchant ships, and occasional statements by the First Lord of the Admiralty on the results of our attacks on U-boats, though doubtless intended to reassure the public—and possibly successful in that object—are in fact no real guide to the measure of success we may be achieving, because they give, not the deliberate Admiralty opinion of the number sunk, but a figure combining those sunk and damaged. Now the history of the last war showed that a high proportion of damaged submarines returned to their bases and re-emerged to continue the fight. During the last war there were numerous examples of direct hits by gun fire on enemy submarines even of bodies being recovered from them which led to their being “written off.” But post-war information showed that some of these U-boats though damaged had returned to their bases and lived to fight another day. And not only does the U-boat go to sea again, but what is even more important the crew, more valuable for the experience gained, is available for further service and for the instruction of new entries. There are doubtless excellent and compelling reasons for the non-publication of the Staff estimates of U-boat sinkings. The public have accepted the necessity for silence on the subject, but the vague statements such as those cited only give material for enemy propaganda about the large number of U-boats operating, while tending to mislead opinion at home.

SHIPPING LOSSES.

On the publication of shipping losses the British and American Governments have taken different lines. In this country no figures have been published since June 1941, presumably on two grounds, firstly, that the enemy would obtain from them a check on the accuracy of his own figures, which have undoubtedly been grossly exaggerated. There is, doubtless, a good deal to be said for this argument, but it is by no means conclusive. Unless the sinkings were enumerated in the areas where they occurred the figures would not reveal what the enemy would most want to know. Whereas if, for instance, the publication of a comparison of enemy claims and actual sinkings were occasionally given over a selected but unnamed period, he would learn almost nothing and the public would have an opportunity to measure the gravity of the situation.

The second ground of objection to the publication of the figures of sinkings is that thereby the amount of tonnage available to the United Nations is concealed from the enemy. But this tonnage depends also on the shipbuilding programme which in this country at any rate is not published, though some American figures have been made known. Never-

theless, this second ground for objection to the publication of the figures undoubtedly has weight, and on the whole justifies the non-publication of complete figures. Yet the occasional publication as suggested above of a comparison of enemy claims and actual sinkings over a selected but unnamed period would, on the other hand, seem to meet the needs of justifiable secrecy, and at the same time serve to keep the importance of the subject and of its effect on the war in the forefront of the public mind.

The policy of the American Government has appeared to vary on this matter. At one time sinkings were announced as they occurred, but latterly their practice has approximated to our own, and it may be presumed that some general agreement has been reached between the two Governments, though it was noticeable that the American losses of naval transports off Casablanca were published, whereas British losses off Algiers and Oran were not.

It might therefore be said that the U-boat problem must be approached without knowledge of the figures of the sinkings of either U-boats or of our shipping, but with the warnings of our leaders and the boastings of our enemies ringing in our ears. This, however, is not all we have to go on. It may be true that we shall have to draw our belts tighter and that the situation may have to be worse before it is better, but it is equally true that we are probably the best fed people in Europe, and that we are maintaining mighty armies in the Middle East and elsewhere. It is also true that our ships are transporting supplies, equipment, fuel and commodities throughout the world, and that with all these commitments in hand we have been able to conduct in North Africa a great overseas operation involving hundreds of ships and scores of thousands of men with their supplies and equipment. Moreover, we now know that the rate of construction of new shipping has overtaken the scale of loss. Clearly, then, we are not at our last gasp; but the dependence of the United Nations remains based on the control of sea communications, for we are still on the perimeter while the Axis Powers are at the centre of the circle. Attrition of sea transport, if it goes beyond a certain limit, will weaken and detract from it if it does not forbid the assembling of the forces necessary to attack and pierce the enemy's central core.

The security of sea communications is therefore a necessary prerequisite to victory, and this as things now are means in effect the defeat of the U-boat. Our superiority in surface ships and our growing superiority in the air, except in certain well defined areas, assure for our ships free passage against attack by surface or aircraft; but the U-boat menace has hardly lessened, and it is this problem which must be solved if the United Nations are to develop their full powers.

TWO METHODS OF ATTACK.

For its solution there are broadly two methods of attack both of which are being employed. The first is the bombing campaign against the factories and building yards and against the bases from which the U-boats work. The results of this form of attack are in the nature of things impossible for the public to assess. In these matters the proof of the pudding is in the eating, and it is the number of new U-boats coming into service each month that provides the only test of the value of the Bomber Command's work. This criterion is naturally not available to the public,*

* Soon after this chapter was written, the Chief of the Canadian Naval Staff stated that, on the average, the number of U-boats in service was increasing at the rate of ten a month.

and the figures given by the enemy certainly mendacious. The extreme air school, headed by Lord Trenchard, argues that the Bomber Command can, almost by itself, solve the problem and that aircraft should not be "diverted" from the attack on the U-boat factories and bases, whose position we presumably know, in favour of searching for and attacking the U-boat whose position at sea is uncertain and whose destruction when found is problematical. There is no doubt that the R.A.F. attacks on the U-boat factories and bases, hampered and limited as they are by weather, and the constant and little publicised minelaying by both Services have a high importance, and must in the long run achieve substantial results; but it may be assumed from the accounts given by press and radio of the work of the R.A.F. that those with the fullest knowledge of all the relevant intelligence are not in agreement with the views of the extremists. Moreover, it has been stated by high authorities in this country and America that the bombing of Germany has not, as yet anyhow, reduced the rate of production of new U-boats.

The second method is to attack the U-boat where she can do the most damage, and that is in the vicinity of the shipping. Opportunities for attacks by patrolling ships and aircraft not infrequently occur, but these are generally fortuitous and cannot be expected to take either a steady or a heavy toll of enemy submarines. To catch rats one must bait the trap, and for the U-boat rat the bait is the shipping. Round and above the shipping must be assembled the strongest and most numerous counter-attacking forces available in order that in the first place attack may be made as difficult as possible, and in the second place that the U-boat, whether she attacks or not, can be counter-attacked by sea and air.

THE CONVOY SYSTEM.

This principle was initiated in the last war when in 1917 the U-boats sinkings became so heavy that some cynic asked if the Army could win the war before the Navy lost it. In that year the convoy system was started after a very short period of trial and an immediate drop in the curve of sinkings was apparent. The convoy system was successful for several reasons. Firstly, because the merchant ships sailed in groups. This enabled the routes they took to be varied quickly from the Admiralty or elsewhere if intelligence indicated the presence of U-boats in their path, while the very fact of their being concentrated in convoys meant that shipping was not scattered over large areas where a cruising U-boat might, and—until the institution of convoy—did snap up ship after ship. In other words convoy meant that there were more large areas empty of shipping and yielding little or no return to the U-boat. Again, the U-boats in the last war operated singly and, having only a limited number of torpedoes, it was difficult for them to make a big bag from one convoy.

But though both these causes produced a fall in the number of merchant ship sinkings they did not operate to increase the sinkings of U-boats. This increase came about from the concentration of escort ships with the convoy. Instead of dispersing these craft on patrols and sweeps, where U-boats might or might not be lurking, they were disposed near the convoys where alone the submarines could do damage. They were thus able to force them to dive—and thus lose speed and vision—and could then attack them when they had done so. So risky for U-boats did attacks on convoys become that during 1918, the last year of the war, the supply

of trained crews fell rapidly and the 5 per cent. or so of German submarine Commanders who were exceptionally skilful were responsible for about 80 per cent. of sinkings. There were, of course, as there are in this war, other methods of attack on the U-boat, such as mines, barrages, nets, and so on; but it was pre-eminently the convoy system that defeated the U-boat in the last war.

The introduction of convoys has, of course, its disadvantages. It means that the speed of the convoy is the speed of the slowest ship and most of the ships are therefore steaming at a lower speed than if separately sailed. This entails longer voyages and fewer of them in each year. Furthermore, the assembly of a convoy takes a few days which, for the ships and the goods they carry are days wasted. Moreover, the arrival in port of a large number of ships together instead of a few each day causes congestion in the ports whose loading and unloading facilities cannot cope with so many, and days are wasted in this way also. It was calculated that during the last war from all these causes something in the nature of 20 per cent. of full normal carrying capacity was lost, but this loss was far more than off-set by the enormous fall in the rate of sinkings.

In the interval between the two wars much progress was made in submarine detecting devices, and the Navy felt reasonable confidence in its ability to beat the U-boat—always provided that we had enough destroyers and escort craft available. As is well known, however, the number of such ships was lamentably inadequate on the outbreak of war, but on the other hand the number of German U-boats was not then very great, and until the fall of France the situation was well in hand.

The German invasion and eventual conquest of Norway and Denmark and subsequently of Holland, Belgium and France had two vital consequences. The first was the depletion of our flotillas by the losses and damage suffered by them during the counter-attack on the German invaders in Norway and—greater still—those suffered by the withdrawal of our Armies from France. It was stated by the First Lord that no less than 70 of our destroyers were lost or laid up for repairs as a result of these operations. The number under repair it is true vastly exceeded the number of those sunk, but the work of repair and reconditioning was bound to, and did, slow down new construction.

THE GEOGRAPHICAL FACTOR.

The second consequence of the German overrunning of the Continent was even more important. Until then Great Britain was a breakwater and a barrier between the German U-boat bases in Germany herself and the outer oceans. Before German submarines could operate on the all-important Western approaches to the British Isles, they had a long way to go, and were subject to all forms of attack during their passage through what were the comparatively narrow channels of the North Sea or the Straits of Dover. Many, of course, did get through, but one need not be a soothsayer to guess that plans were in hand to make their passage hazardous in the extreme.

It is only necessary to recall the measures put into force towards the end of the last war. The mine barriers in the Straits of Dover and across the North Sea from the Orkneys to the Norwegian coast are instances of such measures, and there is little doubt that these or measures of equal or even greater value must have been in preparation in this war. But

with the whole of the Scandinavian, Danish, Dutch and French coasts in German hands all such ideas, calculations and hopes had to be laid on the shelf. The U-boats were, and still are—with certain limitations—free to navigate freely from German ports through and out from the Norwegian fiords to the broad Atlantic; they can pass by the Dutch, Danish, Belgian and French coasts and can use bases on those coasts.

This change from every strategic point of view, but especially from the point of view of anti-U-boat strategy was—it is not too much to say—catastrophic. It brought about the situation that every British naval strategist had recognised as being the worst with which we could be faced. It meant that U-boats working directly from the ports on the Western French seaboard were no longer faced with the dangers, difficulties and long duration of the passage round the north of Scotland before they could operate on the sea routes in the Western approaches to the British Isles. In other words, the U-boat bases henceforward lay on the flanks of our main sea communications and gained all the advantages that such a position brings with it.

Meanwhile also the Germans had embarked on a huge and rapid U-boat building programme at the expense of other warship construction. Accurate figures are, of course, impossible to obtain in war time, but a recent German announcement spoke of 1,000 U-boats by 1943. Such announcements are notoriously unreliable, but the number completed is unquestionably very high, perhaps approaching half that figure.

During the last war and during the post-war period it was widely held that while very rapid expansion of a submarine force was quite feasible from the point of view of the construction of hulls, engine and equipment, it would be almost impossible to provide trained crews quickly enough to man them at an equivalent rate. It should be remembered that the German submarines of all types, large and small, numbered only about 70 before the war, and that an expansion even to the number of 500 would have represented a strain on the German training capacity and facilities which would have seemed beyond their powers before the war. Indeed, this was no more than the truth, and there seems good reason to believe that the required results have been obtained by scrapping many of the pre-war methods of construction, manning and operation of U-boats and by evolving new ones.

Evidence of the type of new construction is naturally not available, but from their own pronouncements, and from our knowledge of German shipbuilding ability, taken in conjunction with the known factors of the problem facing them, we must adjudge it highly probable, to put it no higher, that they have concentrated on producing U-boats of a very few simple and "fool proof" types. Such craft would require a less highly trained crew; and repairs, refits and overhauls would be carried out not by the crews, but by highly trained and specialised shore staffs at the bases. This supposition is borne out by such press accounts as have appeared, and by the photographs of prisoners who seem mostly to be young and of the thoroughly Nazi type.

NEW GERMAN TACTICS.

Of the evolution of U-boat tactics it is possible to speak with even more certainty, because the general outline of their methods of attack is public knowledge and reveals a complete change of system. In the last

war each submarine worked alone in an allotted area and made her attacks individually. This required a very high standard of skill, training and judgment—a standard so high, indeed, that, as already remarked, only a few approached it nearly enough to obtain successful results. The vast majority of the sinkings was achieved by a very few German U-boat captains. The others used to go out and make great claims, but the results when analysed during and after the war showed that they were empty boasts; they generally fired their torpedoes at long range and their chief concern was to bring their boats safely home.

The tactics devised to suit the rapidly expanding U-boat fleet discounted the need for this high standard by operating the boats in packs or flotillas, and by making use of their high surface speed. This speed which may be nearly twice that of the convoys they are attacking permits them to assemble or disperse quickly and to place themselves in positions to make their final pounce. Operating in packs they can spread over a wide area and thus greatly increase their chance of sighting ships or convoys.

Should one of them sight a convoy she will report it and shadow it, but as a rule make no attempt to attack. The others will close, and then using their high surface speed will make their attack still on the surface, but under cover of darkness. This method calls for a far lower standard of skill and training than the individual method, and it also enables a number of U-boats to work in the same area, and thus achieve greater results than would be possible for a single submarine. Some U-boats still work individually in areas unsuitable for the pack method, and these doubtless are manned by the more highly trained crews, but in the wider oceans for example, the U-boat working individually is an exception and the group or pack system is employed. By such changes then in methods of construction and of tactics, the Germans have approached and—in justice to them it must be said that they have gone far towards solving—the problem of the great and rapid expansion of their U-boat fleet.

The consequent threat to our control of sea communications has been, and still is, serious. How serious we are not allowed to know except, as was explained at the outset of this chapter, from the warnings of our leaders, but those warnings should leave us in no doubt of the gravity of the position. It remains then to describe the measures taken to meet the menace.

THE AIR FACTOR.

The direct attacks by the Bomber Command of the R.A.F. on the enemy factories and bases have already been referred to. They play, no doubt, a valuable part and their weight will doubtless increase, but so far by themselves they have played only a minor part in the whole problem. A second front in Europe resulting in the capture of the U-boat bases in Western France would have a direct and immediate effect on the weight of the U-boat offensive, but while this may come, and is to be hoped for, it cannot as yet be relied on, and it is on the attack on the U-boats at sea that we must concentrate our principal efforts. The chief factors of success of the U-boat attack on our convoys have been explained as their employment in numbers and the use of their high surface speed. Once forced to submerge by our surface escorts or aircraft, both their speed and their range of vision are at once greatly limited. For example, it will be obvious that aircraft making wide sweeps round a convoy would

prevent the rapid concentration of a widely dispersed U-boat pack. If they came to the surface to use their high speed they would be attacked by both ships and aircraft and forced again to dive. On the other hand, there are still great areas of the oceans beyond the range of the regular air patrols of the Coastal Command of the R.A.F.

In parenthesis it may be recalled that this command was brought under the operational control of the Admiralty in December, 1940, though its strength as well as its training and administrative control are still the responsibility of the Air Ministry. This is what used to be called a "typically British" compromise; but its working in the groups and operational areas has been successful, and the officers of the two services have worked well and whole-heartedly together. The system nevertheless is an illogical one, since the Admiralty which is the authority for ordering and regulating the movements of fleets, squadrons and convoys might be expected to have the final voice in the strength, training and administration of their air as well as that of their surface escorts. However, such is the present system, and it is unlikely that any major changes will be made during the war in what is in effect a political compromise.

To return to the employment of aircraft in the areas beyond range of the Coastal Command, the announcement of the loss of an auxiliary aircraft carrier during the North African operations may indicate that a number of such ships are being built, though possibly only for the more important convoys. Such ships would have a high value if in sufficient numbers, but if built in sufficient numbers and quickly enough they would have to be of moderate size, which again would limit their usefulness to reasonably good weather.

Such are the main aspects of the attack on U-boats and defence of convoys which concern aircraft, and there remain the close escorts of the convoys composed of destroyers, corvettes, sloops, trawlers and similar small craft, the exact class or type being selected according to the speed of the convoy, the weather to be expected, the length of the voyage, the opposition probable and—above and beyond everything else—according to the numbers available. It is shortage of available escort craft which has been our chief handicap throughout the U-boat war. The gravity of it in the early days may well be measured by the loan of fifty over-age American destroyers contemporaneously with the grant to the United States of 99 years leases of sites for naval and air bases in the Western Atlantic and Caribbean. Though it was an exchange probably well worth while, and though since then the shipyards of this country, Canada and the United States have been working overtime to build more escort craft, the shortage still persists. For it is upon the close escort to our convoys that their safety depends, and it is these escorts also that yield the greatest harvest in U-boat sinkings.

THE ESCORT SHIPS.

It may be well here to consider the requirements of these "little ships." They must in the first place be strong and seaworthy enough and have sufficient endurance to accompany the ships they are protecting through the weather and seas they are likely to encounter, and they must have speed enough not only for the convoy, but enough also to overtake and rejoin the convoy after being left behind for a time hunting a U-boat or rescuing the crew of a torpedoed merchant ship. They must further

be equipped with anti-submarine devices, depth charges and guns sufficient for dealing with submarines as well as with enemy small craft and E-boats, and finally, an adequate anti-aircraft armament. They are, therefore, ships requiring considerable size and engine power and a multiplicity of armament and equipment, and they cannot by any means be "built by the mile and cut off by the yard" in the old phrase.

The competing claims for more shipping to replace tonnage lost, and more escort craft to attack U-boats and protect existing tonnage are among the harder of those to settle, but as the new construction curve rises above the curve of sinkings they will be more easily dealt with. One thing is certain, there can never be enough escort vessels during this war, for nothing can take their place or perform their functions and their number at the outset of war, and ever since, has been woefully inadequate.

For obvious reasons it would not be proper to discuss the tactics of escort craft in any detail. When escorting aircraft are available the aircraft keep the U-boats submerged during daylight in clear weather, and this, while it lessens the chance of their attacking after dark, does not prevent it. But in such cases the escorting ships would not allow themselves to be drawn away in daylight hours. At night, in thick weather, or without aircraft the escorting craft must depend on their own anti-submarine devices. From all these considerations it will be clear how important and valuable is the air factor in reducing the strength of the U-boat attack; it will be clear also that valuable as it is, the structure of the U-boat war is based ultimately on the escort craft and flotillas.

CONCLUSION.

Such, then, are the elements of the U-boat war, as far as we are allowed to know them. On the one hand there is the great and still growing number of U-boats perfecting their tactics and taking their steady toll of merchant shipping to a degree described by the Prime Minister as not diminishing but growing. On the other hand there is the combined effort of the United Nations on the sea and the air, with all the scientific resources at their disposal. This effort and these resources, resulting as they must surely do in a vastly increased scale of attack, give us confidence that the problem will be solved within measurable time. The fact that new construction is beginning and, it is hoped, will continue to outweigh sinkings should not satisfy us. It is not only shipping tonnage that is sunk: with the ships go down the cargoes they carry, and all too often many of the gallant men manning the ships. These men, as every sailor knows, are irreplaceable.

We must, indeed, protect the ships, but in the end the best way to protect them is to attack and sink the U-boats. That is the U-boat war.

"GREENWICH."

CHAPTER VII.

SUBMARINES AND LIGHT COASTAL CRAFT IN 1942.

Two important factors of the war at sea during 1942 have been the great successes achieved by our submarines, chiefly in the difficult and dangerous waters of the central Mediterranean, and the great increase in the strength and offensiveness of our light Coastal Forces.

BRITISH SUBMARINES IN 1942.

The year 1942 was outstanding in British submarine history, both by reason of the scale of the British submarine effort employed, and the results achieved. When the full story of our submarines can be written, there is no doubt that their work in 1942 will be adjudged even more notable than the operations carried out by British submarines in the Sea of Marmora, inside the Heligoland Bight, and in the Baltic during the war of 1914-18. Submarine operations were more widespread than ever before. British submarines operated successfully in the Arctic and in the waters of the Dutch East Indies, as well as in the Atlantic, the Mediterranean, and the North Sea.

Events made the Mediterranean the main theatre of British submarine warfare during the year. The strategic position of Italy, the Italian islands, and Libya—straddling the central narrows of the Mediterranean—made this an area in which our naval operations had to be conducted chiefly by submarines. In this area, too, was the greatest volume of enemy seaborne communications, dictated by the constant need for supply and reinforcement of the Axis armies in Libya. It was under constant enemy air patrol, with E-boats and other anti-submarine craft operating continuously from Lampedusa, Pantellaria, and the Sicilian, Italian and Libyan bases. The water in this area is usually clear, and on a calm day a submarine can be seen by aircraft, even if submerged to a considerable depth.

The enemy, faced with only short sea passages, and having at his disposal a large force of fast destroyers and similar craft, was able to carry his military reinforcements and supplies in small convoys having very strong escorts, and to arrange for the most dangerous part of their passage to be accomplished in dark hours.

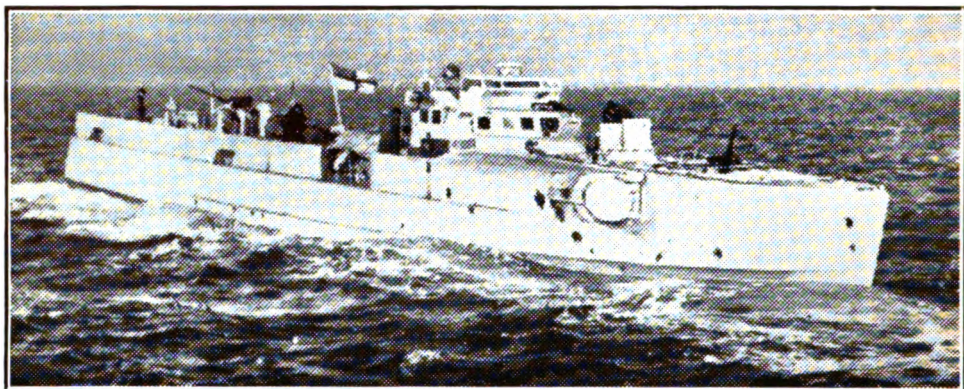
Add to these factors the copious use of mines by the Italians, and it will be appreciated that our submarines in the central Mediterranean operated under conditions of extreme difficulty and danger. Yet they inflicted very serious loss upon the enemy, and there is no doubt that they contributed largely to the decisive victory of the Eighth Army, and later gave valuable assistance to the First Army.

In the last weeks of 1942, when the Axis sought to offset the Allied landings in French North Africa by throwing large forces into Tunisia in an attempt to consolidate that immensely important strategical bridge-head, an even greater responsibility was thrown upon our submarines. They responded immediately and successfully to the call, and took full advantage of the greater number of targets presented by the enemy.

In September, 1942, Admiral Sir Max Horton, the Admiral of Sub-



Damage to Conning tower of Italian submarine Cobalto.



A captured E-boat.
(Official Photograph. Crown copyright reserved.)



Prisoners from a German submarine.

marines, stated that "British submarines in the present war have sunk 300 enemy supply ships, including many troopships, and damaged nearly 50 more; and have sunk or damaged 87 German and Italian warships, including more U-boats than were destroyed by British submarines in the whole of the last war."

After that statement was made, official communiqués showed that the rate of loss inflicted on the enemy by our submarines not only increased, but multiplied—chiefly as a result of the greater volume of enemy sea traffic called for by the Libyan and Tunisian campaigns.

Analysis of the official communiqués shows that of 24 enemy warships and 145 troopships and supply ships sunk or damaged by our submarines during the past year, 12 warships and 67 troopships and supply ships were sunk or damaged since the beginning of the Eighth Army's offensive at El Alamein late in October.

Nearly all the ships classed as "damaged" were hit by torpedo. The damage inflicted can therefore be considered serious. Having regard to the vital importance of the time factor in the arrangements the enemy has been trying to make; and the delays and disorganisation imposed upon Italian ship-repairing by the visits of the R.A.F. and United States Air Forces to shipyards and centres of industry and communications; it seemed justifiable to consider ships hit by torpedo during recent months as useless to the enemy during the campaigns then in progress.

The central Mediterranean, although the most important, has not been the only part of the Middle Sea to be successfully exploited by our submarines during the past year. In the Aegean a great many enemy ships were destroyed—ships concerned with the movement of troops and supplies to the Greek islands and the Dodecanese, and, probably more important in the long run, the transport of oil from the Rumanian oil fields to Italy. A number of tankers engaged on this work were torpedoed by British submarines.

When the whole of Cyrenaica was in Axis hands the enemy made a practice of assembling his convoys on the west coast of Greece and running them across from Cape Matapan to Benghazi, Derna, Tobruk, and Mersa Matruh. During this phase our submarines operated successfully south of Greece and along the Greek west coast.

It was in these waters, in early March, that Commander A. C. C. Miers, D.S.O., R.N., won the fourth submarine V.C. of the war by seeking out the enemy in one of his defended harbours in order to destroy him. The *London Gazette* citation of this award was as follows:—

"For valour in command of H.M. Submarine Torbay in a daring and successful raid on shipping in a defended enemy harbour, planned with full knowledge of the great hazards to be expected during 17 hours in waters closely patrolled by the enemy. On arriving in the harbour he had to charge his batteries, lying on the surface in full moonlight under the guns of the enemy. As he could not see his target he waited several hours and attacked in full daylight in a glassy calm. When he had fired his torpedoes he was heavily counter-attacked and had to withdraw through a long channel with anti-submarine craft all round and continuous air patrols overhead."

The harbour entered by the Torbay was Corfu Roads. To reach the anchorage the submarine had to make the passage of the 20-mile long channel between the island of Corfu and the Greek mainland. The width of this channel varies, but it never exceeds 12 miles, and its southern entrance is only about $1\frac{1}{2}$ miles wide. It was a calm and still night, so that in parts of the passage the diesel engines could not be used as they might have been heard by the enemy. The resulting drain on the electric

batteries made it necessary to re-charge on the surface at the entrance to the Roads themselves, since it was imperative to have ample power if there were to be any chance of successful withdrawal by daylight after the attack. It was, moreover, only one day after full moon, and the sky was clear. While trying to attack at dawn the Torbay had to turn away to avoid being rammed by a patrol vessel. This delay imposed the necessity of attack in broad daylight, yet two supply ships were hit by torpedoes and almost certainly sunk, and the Torbay was afterwards skilfully extricated from a very dangerous situation, and reached the open sea just before noon after a passage made no easier by the frenzied activity of the enemy surface and air patrols and the dropping of a large number of depth charges. The Torbay was not the only submarine to seek out the enemy in his harbours when he could not be found at sea.

Two other submarine V.C.'s have been awarded during the year. These were to Lieutenant P. S. W. Roberts, R.N. and Petty Officer T. W. Gould—the First Lieutenant and Second Coxswain of H.M. Submarine Thrasher—for saving their submarine under conditions of great difficulty and danger. The *London Gazette* citation of these awards was as follows :—

“ On February 16, in daylight, H.M. Submarine Thrasher attacked and sank a heavily escorted supply ship. She was at once attacked by depth charges and was bombed by aircraft. The presence of two unexploded bombs in the gun-casing was discovered when, after dark, the submarine surfaced and began to roll.

“ Lieutenant Roberts and Petty Officer Gould volunteered to remove these bombs, which were of a type unknown to them. The danger in dealing with the second bomb was very great. To reach it they had to go through the casing, which was so low that they had to lie at full length to move in it. Through this narrow space in complete darkness, they pushed and dragged the bomb for a distance of some 20 feet until it could be lowered over the side. Every time the bomb was moved there was a loud twanging noise, as of a broken spring, which added nothing to their peace of mind. This deed was the more gallant as H.M.S. Thrasher's presence was known to the enemy; she was close to the enemy coast, and in waters where his patrols were known to be active day and night. There was a very great chance, and they knew it, that the submarine might have to crash dive while they were in the casing. Had this happened they must have been drowned.”

This amazing incident happened in the Aegean. Many submarines have had almost miraculous escapes, but that of the Thrasher is unique.

Not content with doing great execution among the enemy shipping, British submarines carried submarine warfare into the enemy's territory along the coasts of Italy and Sicily. It was revealed early in December that one of our submarines had shelled and blown up two railway trains, and that oil storage tanks and a factory had also been successfully bombarded. The coasts of Italy and Sicily are very vulnerable to such attacks, since they are mostly steep-to, and the Italian railways run for many miles close to the shore, with many viaducts and tunnels forming tempting and profitable targets. It may be supposed, therefore, that the incidents referred to above are not without precedent. Nor can they be dismissed as unimportant raids. The length of the Italian seaboard makes her particularly vulnerable to attack from the sea. Sudden bombardments must force the Italians to strengthen their coast defences at the expense of other urgent requirements, and every interruption of her communications system contributes to the disorganisation and ultimate defeat of the Axis powers.

The reclamation of the vast and strategically important territories of French North and West Africa was the greatest offensive step so far taken by the United Nations, and in this a British submarine played a notable

part. It was a British submarine which landed American negotiators on the Algerian coast for secret parleys with the French; and it was a British submarine which penetrated a Vichy harbour and extricated General Giraud so that he could take command of the French in Africa.

During the year there was a considerable increase in the responsibilities of our submarines off the Norwegian coast. In January the battleship Tirpitz—sister ship of the Bismarck—went to the Norwegian coast, and she has remained there ever since. Other powerful German units were in Norwegian waters from time to time. They varied their bases, but wherever they were our submarines had to be constantly on the watch for any sudden movement which might herald a raid or an attempt to break out into the Atlantic.

For many months in the summer the Tirpitz and some of her consorts were in the Narvik area. This was at a time when convoys carrying British and American supplies to Russia were forced by the ice to pass fairly close to the North Cape. The German surface ships were only part of the threat massed by the Germans in north Norway in an attempt to stop the passage of these convoys. Destroyers and strong concentrations of the Luftwaffe were also stationed in North Norway. To keep watch against the German heavy ships, and to attempt to intercept and attack them if they left the fiords and tried to interfere with the passage of our north Russian convoys became the chief responsibility of the British submarines stationed in so-called "home waters."

In the event, the only submarine to lay claim to a successful attack on the Tirpitz was Russian. This, however, in no way detracts from the value of the many arduous patrols carried out by our submarines within the Arctic Circle. It may well be that the almost total lack of initiative shown by the German heavy ships was due to knowledge that our submarines patrolled those waters.

In addition to maintaining these patrols, submarines took their place among the escorts of the Murmansk and White Sea convoys in order further to guard against the threat of the German heavy ships. While so doing some of our submarines were heavily attacked from the air, but always they escaped damage—fortunately, for in those waters, so far from a base, damage to a submarine would be a very serious matter.

In the Atlantic and the Bay of Biscay our submarines performed valuable work. Because scarcity of targets, owing to the enemy's lack of sea-going enterprise, precluded the issue of communiqués, one must not imagine that nothing was done. It would probably be impossible to compute the number of hours spent on patrol by British submarines for every target seen and attacked, but the figure would certainly be astonishing for all waters outside the Mediterranean.

In February the Scharnhorst and Gneisenau and the Prinz Eugen left Brest and succeeded in making their way up Channel and gaining the German ports. This was a bitter disappointment to our submarines. Month after month they had maintained patrols off Brest in all weathers.

The ubiquity of the work of British submarines was underlined in the middle of December, when it was announced that H.M. Submarine Truant, commanded by Lieutenant-Commander H. A. V. Haggard, D.S.O., D.S.C., R.N., had returned to the United Kingdom after two and a half years service abroad in the Mediterranean, the Adriatic, the Indian Ocean, the Java Sea, the Malacca Straits, and the Sunda Strait. It is worth recalling that the Truant, then under a different commanding officer,

served with conspicuous success during the Norwegian campaign, when she sank the German cruiser Karlsruhe. Towards the end of the year, and long after the Truant must have left the Far East, the Admiralty announced the sinking of a Japanese supply ship by one of our submarines, showing that the Truant was not alone in Far Eastern waters.

The great successes achieved by British submarines in the past year have not been cheaply gained. There have been many losses to bring home to us the dangerous nature of submarine warfare under modern conditions.

The summer was marred by the announcement of the loss of perhaps the most famous submarine of this war—H.M. Submarine Upholder, commanded by Lieutenant-Commander M. D. Wanklyn, V.C., D.S.O., R.N., who had been awarded the first submarine V.C. of this war.

In announcing this loss on August 22, the Admiralty added the following to its usual terse communiqué :—

"It is seldom proper for Their Lordships to draw distinction between different services rendered in the course of naval duty, but they take this opportunity of singling out those of H.M.S. Upholder, under the command of Lieutenant-Commander M. D. Wanklyn, for special mention. She was long employed against enemy communications in the Central Mediterranean, and she became noted for the uniformly high quality of her services in that arduous and dangerous duty. Such was the standard of skill and daring set by Lieutenant-Commander Wanklyn and the officers and men under him that they and their ship became an inspiration not only to their own flotilla, but to the fleet of which it was part and Malta, where for so long H.M.S. Upholder was based. The ship and her company are gone, but the example and the inspiration remain."

The Upholder was the most famous, but by no means the only submarine to make the ultimate sacrifice during a year in which British submarines have played a considerable part in achieving the far better position in which the cause of the United Nations finds itself. The loss of 11 other British submarines was announced by the Admiralty during 1942.

THE LIGHT COASTAL FORCES IN 1942.

No section of the Royal Navy developed so much during 1942 as the Light Coastal Forces. Unfortunately, figures of the expansion and development of these forces, and full facts about the extension of their operations cannot yet be divulged. Some insight into the importance of the operations of these craft was, however, given a few months ago, when for a time hardly a day passed without news of a clash between our Light Coastal Forces and those of the enemy or an enemy convoy. That was during a period of good weather. The last months of 1942 provided almost uniformly bad weather in the English Channel and the southern part of the North Sea—the chief areas of operations of the Light Coastal Forces in home waters.

The bad weather did not mean that our craft were not operating at sea. It is true that the smaller vessels of the Light Coastal Forces cannot keep the sea in bad weather. These forces, however, contain an increasing proportion of larger boats, with sea-keeping qualities which will allow them to remain at sea in almost any weather. The armament of these larger craft is far ahead of anything the enemy has so far shown himself to possess, and it is probable that lack of news of successful activities by our boats in a bad weather period is largely due to the inability of the enemy boats to keep the sea in heavy weather.

Many of the activities of our Light Coastal Forces were directed against

enemy coastal convoys skirting the shores of France, Belgium and Holland. These coasts have harbours at short intervals. Our activities made it prudent months ago for the enemy to abandon the attempt to run convoys all the way through the Channel and the southern part of the North Sea in one dash. They were forced to adopt a "port-hopping" system, making quick rushes from port to port on dark nights and when the weather favoured evasion, in the attempt to avoid being at sea for long enough for our Light Coastal Forces to intercept and attack. One must remember that, although many of our boats are now capable of keeping the sea in almost any weather, they have to operate at reduced speed in bad weather, and this must give the enemy more time to get from port to port with the minimum danger of attack. These factors, however, impose delays upon the enemy's coastal traffic, and congestion at his ports; both of which help to disorganise the whole closely-knit system of the enemy's communications.

The work of the Light Coastal Forces in the English Channel and the southern part of the North Sea may be broadly divided into three categories. They are:—

To give protection to our convoys against E-boats and other light enemy forces.

To intercept and try to destroy E-boats setting out on minelaying expeditions.

To seek out and destroy the enemy's coastal traffic.

The latter is the most truly offensive of the three main rôles, and it is one of great importance. It is closely fitted into the strategy of the destruction and disorganisation of the whole transport system of Germany, Italy, and the occupied territories. Our bombing policy has been largely directed to this object. When our bombing and the increasing strain put upon the European transport system by German demands and lack of replacement of railway material began to produce a dangerous situation on the railway systems of western Europe, the Germans were forced to try to run coastal convoys along the northern shores of Europe in order to relieve the pressure upon the overworked and bombed railway systems. As soon as these convoys appeared at sea they became the targets of the Light Coastal Forces by night and of the aircraft of the Coastal and Fighter Commands by day. Not only were a large number of the enemy's coastal convoys intercepted and ships either destroyed or so damaged as to be unable to continue their voyages, but an additional strain was thrown upon the ship-repairing facilities in the much bombed ports of northern France, Belgium and Holland, and the whole of the coastal traffic was delayed.

In the latter part of the year the Fighter Command of the Royal Air Force began systematically raiding the railways of northern France. This was again part of the strategic plan, and the inference is that the German traffic, or much of it, had been driven back to the land by the efficiency of our Light Coastal Forces. Here we see the Royal Navy and the Royal Air Force working in close collaboration, not in a single operation, but in a general plan.

There is, in fact, a great similarity between aircraft and the Light Coastal Forces. Both usually operate for comparatively short periods, during which their crews are subjected to great strain. Both fight at speeds far higher than the ordinary man can easily visualise—an action between E-boats and our Light Coastal craft may be fought on a pitch

dark night at a relative speed of about 85 knots, or close on 100 miles an hour. Such a speed over the water gives little time for deliberation or the calculation of the niceties of range and deflection. Decisions have to be instantaneous.

Our Light Coastal Forces are also of great assistance to the Royal Air Force. During the latter part of the summer the Germans, apparently dissatisfied with their anti-aircraft defences ashore in face of our raids on docks and ports of the French and Flemish coasts, stationed "flak ships" off the coast to greet our aircraft with concentrated anti-aircraft fire as they approached the coast. These gave our Light Coastal Forces an opportunity of which they were quick to avail themselves. Night after night they crept over to the enemy coast and attacked these flak ships, sinking many of them and damaging many more, and inflicting serious casualties among their crews, so that the enemy was forced virtually to abandon the policy of stationing these ships off his coast.

Our Light Coastal Forces also helped the Royal Air Force to a great degree with the Air-Sea Rescue Service. At the end of the year the majority of the craft employed on this work were manned by the R.A.F., but there were still some fifty naval craft on this duty. The combined efforts of the Royal Navy and the Royal Air Force rescue craft resulted in some 85 per cent. of all airmen forced down in the sea being rescued. One pilot was rescued by a naval boat nearly 200 miles west of Ushant. The Royal Air Force launches are, broadly speaking, responsible for the inshore work, while the Navy is responsible for long distance rescues; but the duties overlap as the need arise, for speed and co-operation count for more than boundaries in this work.

It is, unfortunately, not possible to give figures for the growth of the Light Coastal Forces during 1942. One can, however, give an idea of the enormous expansion of this branch of the Royal Navy since the beginning of the war, and one should bear in mind that the greater part of this expansion has been recent.

Before the war the Navy possessed a small number of motor torpedo boats and other light craft. Some of these were in the Mediterranean; some were sent to Hong Kong. All were of a type now regarded as obsolete.

The outbreak of war saw certain expansion and development, but it was not until after Dunkirk that the great need for light craft was generally apparent. The danger of invasion brought home the value of light craft having sufficient speed to intercept an enemy trying to make a short sea passage, and with armament sufficiently powerful to deal with the enemy when intercepted. At that time, however, material was hard to come by. Not only an army, but a whole country, had to be re-equipped. Gradually, however, it became possible to build up our Light Coastal Forces.

The strength of our Light Coastal Forces in 1943 is ten times what it was two years earlier, so far as vessels are concerned; and fifteen times as strong in men. The reason why the man-power strength has increased by a greater proportion than the number of craft in service is that the larger and more powerful types came into service. A measure of the recent expansion can also be seen in the official communiqués dealing with actions fought by these craft. Up to about the middle of 1942 one heard continually that our patrols had been engaging superior forces of the enemy. In the next six months the Admiralty communiqués did not speak of the enemy forces as being superior. The great sea-keeping qualities of the

larger craft are shown by the fact that many of them have done the 1,000 mile voyage to Gibraltar and even on to Sierra Leone without misadventure.

The activities of our Light Coastal Forces are becoming more world-wide every day, and more craft are being built practically all over the world. They are manned almost entirely by "hostilities only" ratings and officered by the Royal Naval Volunteer Reserve. It has been found that, after a short training, many men with no previous sea experience become efficient and well adapted to this service. It is arduous and extremely exacting, particularly in bad weather. It is therefore a "young man's service." There is no hard-and-fast age limit, but in practice there are few officers and men at sea in Light Coastal Craft over 35 years of age.

The "amateur status" of this new small craft service is illustrated by the fact that one of its ablest officers—Lieutenant-Commander R. P. Hichens, D.S.O., D.S.C., R.N.V.R., who has a bar to his D.S.C. and has also been mentioned in despatches—was before the war a solicitor in the West Country. The personnel of the Light Coastal Forces are, however, most insistent that they do not form a separate service, or even a "service within a service"—they are just part of the Royal Navy.

The growth of the Light Coastal Forces has been chiefly responsible for the introduction of a new rate in the Navy. This is the "motor mechanic." They are usually entered as such direct from engineering shops and garages. After a short course, they find themselves looking after the intricate machinery of these high speed craft. They are dressed as E.R.A.'s in "fore and aft rig," and wear no special badge. Their work often involves emergency makeshift repairs in the face of the enemy. On one occasion one of our boats was saved by a makeshift repair carried out with the help of a packet of cigarettes.

Our Light Coastal Forces have given to the word "coastal" a different interpretation in 1942. It used to refer to the protection of our own coasts. Now it refers almost entirely to offensive operations off the enemy's coasts, inside the enemy's minefields and close under his shore batteries.

The Germans do not seem to be as good at high speed fighting at night as our men, despite the undoubted efficiency of their weapons. They tend to get confused, and are often surprised. An example of this took place early on the morning of August 2. One of our patrols surprised a force of E-boats only one mile off the breakwater at Cherbourg. The E-boats were preparing to enter harbour, and apparently did not even have their guns manned. At any rate, there was no return fire at first, and when the enemy did open fire, their shooting was wild. Within five minutes the E-boats had been reinforced by two 600 ton torpedo boats. Our boats inflicted serious damage and casualties on the E-boats and the big torpedo boats. Then our boats withdrew and watched a spirited engagement between the German torpedo boats and the E-boats, an action in which the shore batteries joined with zest, whereupon the German torpedo boats became exasperated and opened fire on their own shore batteries. This was by no means the only case in which the Germans have been so confused by our boats that they have engaged each other.

KENNETH EDWARDS.

CHAPTER VIII.

U.S. NAVY.

OFFICIAL DOCUMENTS.

ON December 6, 1942, a year after the treacherous Japanese attack on the American Fleet and Naval Base at Pearl Harbour, the Navy Department in Washington issued the following official narrative of the events of December 7, 1941, amplifying the accounts and official reports published earlier, which are to be found in last year's issue of "Brassey's Naval Annual."

I.

THE JAPANESE ATTACK AT PEARL HARBOUR.

"On the morning of December 7, 1941, Japanese aircraft temporarily disabled every battleship and most of the aircraft in the Hawaiian area. Other naval vessels, both combat and auxiliary, were put out of action and certain shore facilities, especially at the Army Air bases, the Hickam and Wheeler Fields, and Naval Air stations at Ford Island and Kaneohe Bay, were damaged. Most of these ships are now back with the fleet. The aircraft were all replaced within a few days and interference with the facilities was generally limited to a matter of hours.

"When the Japanese attacked Pearl Harbour, two surface-ship task forces of the Pacific Fleet were carrying out assigned missions at sea, and two such task forces were at their main base, following extensive operations at sea. Discounting the small craft, 86 ships of the Pacific Fleet were moored at Pearl Harbour. Included in this force were eight battleships, seven cruisers, 28 destroyers, and five submarines. No United States aircraft carriers were present.

RESULTS OF THE ATTACK.

"As a result of the Japanese attack five battleships, the Arizona, Oklahoma, California, Nevada, and West Virginia; three destroyers, the Shaw, Cassin, and Downes; the minelayer Oglala; the target ship, Utah, and a large floating dock were either sunk or damaged so severely that they would serve no military purpose for some time. In addition, three battleships, the Pennsylvania, Maryland, and Tennessee, three cruisers, the Helena, Honolulu, and Raleigh, the seaplane tender, Curtiss, and the repair ship Vestal were damaged. One of the 19 naval vessels listed above as sunk or damaged, the 26-year-old battleship Arizona, will be the only one permanently totally lost. Preparations for the righting of the Oklahoma are now in process, although the final decision as to the wisdom of accomplishing this work at this time has not been made. The main and auxiliary machinery, approximately 55 per cent. of the value of the Cassin and Downes, were saved. The other 15 vessels either have been or will be salvaged and repaired.

"All of the vessels described above as having been damaged but not sunk returned to the fleet months ago. A number of the vessels described as having been in a sunken condition are now in full service, but certain

others, which required extensive machinery and intricate electrical overhauling, as well as refloating, and hull repairing, are not yet ready for battle action. Naval repair yards are taking advantage of these inherent delays to instal numerous modernization features and improvements. To designate these vessels by name now would give the enemy information vital to his war plans; similar information regarding enemy ships our forces have subsequently damaged but not destroyed is denied us. On December 15, 1941, only eight days after the Japanese attack and at a time when there was an immediate possibility of the enemy coming back, the Secretary of the Navy announced that the Arizona, Shaw, Cassin, Downes, Utah, and Oglala, had been lost, that Oklahoma had capsized, and that other vessels had been damaged. Fortunately salvage and repair accomplishments at Pearl Harbour have exceeded our most hopeful expectations.

"Eighty Naval aircraft of all types were destroyed by the enemy. In addition, the Army lost 97 planes on the Hickam and Wheeler fields. Of these, 23 were Bombers, 66 were Fighters, and eight were other types.

CASUALTIES.

The most serious American losses were in personnel. As a result of the raid on December 7, 2,117 officers and enlisted men of the Navy and Marine Corps were killed, 960 are still reported missing, and 876 were wounded but survived. The Army casualties were as follows: 226 officers and enlisted men were killed, or later died of wounds, 396 were wounded, most of whom have now recovered and returned to duty.

NARRATIVE OF THE ATTACK.

"At 7.55 a.m. on December 7, 1941, Japanese dive-bombers swarmed over the Army air base at Hickam Field and the Naval air station on Ford Island. A few minutes earlier, the Japanese had struck the Naval air station at Kaneohe Bay. A bare few seconds later enemy torpedo planes and dive-bombers swung in from various sections to concentrate their attack on heavy ships at Pearl Harbour. The enemy attack, which was aided by the element of surprise and based on exact information, was very successful. Torpedo planes, assisted effectively by dive-bombers, constituted the major threat of the first phase of the Japanese attack lasting approximately half an hour. Twenty-one torpedo planes made four attacks and 30 dive-bombers came in in eight waves during this period. Fifteen horizontal bombers also participated in this phase of the raid.

"Although the Japanese launched their initial attack as a surprise, a battleship ready with its machine-guns opened fire at once and these were progressively augmented by the remaining anti-aircraft batteries as all hands were promptly called from General Headquarters. Machine-guns brought down two, and damaged others of the first wave of torpedo planes. Practically all the battleship anti-aircraft batteries were firing within five minutes; cruisers within an average time of four minutes; destroyers opening up machine-guns almost immediately averaged seven minutes in bringing all anti-aircraft guns into action.

"From 8.25 a.m. to 8.40 a.m. there was a comparative lull in the raid, although air activity continued with a sporadic attack by dive and horizontal bombers. This respite was terminated by the appearance of

horizontal bombers which crossed and recrossed their targets from various directions and caused serious damage. While the horizontal bombers were continuing their raids, Japanese dive-bombers reappeared, probably being the same ones that had participated in the earlier attacks; this phase, lasting about half an hour, was devoted largely to strafing. All enemy aircraft retired by 9.45 a.m.

"Prior to the Japanese attack 202 U.S. Naval aircraft of all types on the island of Oahu were in flying condition, but 150 of these were permanently or temporarily disabled by the enemy's concentrated assault, most of them in the first few minutes of the raid. Of the 52 remaining Naval aircraft, 38 took to the air on December 7, 1941, the other 14 being ready too late in the day or being blocked from the take-off positions. Of necessity, therefore, the Navy was compelled to depend upon anti-aircraft fire for its primary defensive weapon, and this condition exposed the Fleet to continuous air attack. By coincidence eighteen scout bombing planes from a United States aircraft carrier *en route*, arrived at Pearl Harbour during the raid. These are included in the foregoing figures. Four of these scout bombers were shot down, 13 of the remaining 14 taking off again in search of the enemy. Seven patrol planes were in the air when the attack started.

JAPANESE NUMBERS.

"It is difficult to determine the total number of aircraft participating in the raid, but careful analysis of all the reports makes it possible to estimate the number as 21 torpedo planes, 48 dive-bombers, and 36 horizontal bombers, totalling 105 of all types. Undoubtedly, certain fighter planes were also present, but these are not distinguished by types and are not included in the above figures. There were a total of 273 Army planes on the Island of Oahu, December 7, 1941, very few were able to take off because of the damage to the runways at the Hickam and Wheeler fields. The enemy lost 28 aircraft due to Navy action, and the few Army pursuit planes that were able to take off shot down more than 20 Japanese planes. In addition, three submarines of 45 tons each were accounted for.

"The damage suffered by the United States Pacific Fleet as a result of the Japanese attack on December 7, 1941, was most serious, but the repair job is now nearly completed, and thanks to the inspired, unceasing efforts of naval and civilian personnel attached to various repair yards, especially at Pearl Harbour itself, this initial handicap will soon be erased for ever."

II.

NEW GUINEA AND THE CORAL SEA.

The Navy Department issued the following communiqué on Friday, June 6, 1942:

"The Battle of Midway now makes it possible to release information in regard to the Battle of the Coral Sea. Holding up this information gave to our Navy security which was a cornerstone in building for the Midway victory. In early March the Japanese were observed to be concentrating transports and combatant ships in the ports of Salamaua and Lae on the island of New Guinea, apparently in preparation for an assault on Port Moresby on the south coast of the same island. The occupation of Port Moresby would have afforded the enemy a strategically located

advance base from which promptly to make further attacks on Northern Australia. For some time the bases at Salamaua and Lae had been subjected to air attacks by United States and Australian shore-based aircraft from Australia. On March 10 a number of aircraft from a Pacific Fleet task force under the command of Vice-Admiral Wilson Brown joined these shore-based planes in their successful attack on shipping and shore installations at the enemy bases.

As announced in the Navy Department communiqué of March 18, this attack resulted in the following damage to the enemy : sinking of or damage to more than twenty Japanese ships and heavy damage to shore installations. The resulting disruption of Japanese plans delayed for two months any attempt of the enemy to advance by sea to the southward. The attacking force was described in the communiqué as American and Australian island-based forces, since the participation of our carriers in that action had still not been discovered by the enemy. During April our Army reconnaissance planes reported that the enemy was once again concentrating transports and supporting elements, including aircraft from carriers and shore bases, preparatory to an attempt to advance into the Solomon and Louisiade Islands. In early May these advances were actually begun. Bases for land planes in both of these groups of islands were seized by the Japanese and the entire northern portion of the Coral Sea was subjected to daily reconnaissance by enemy shore-based aircraft.

On May 4 a task force of the Pacific Fleet under command of Rear-Admiral Frank J. Fletcher found a part of this Japanese invasion fleet at anchor in and near the harbour of Tulagi, the capital of Florida Island in the Solomon Group. In spite of excellent Japanese air reconnaissance facilities, Admiral Fletcher's attack caught the Japanese forces completely by surprise and all but annihilated them. A few ships managed to get under way, but most of these were severely crippled and some were laid abeach to prevent their sinking. The results of this engagement, as announced in Navy Department communiqué of May 7, were as follows : Sinking of or damage to 12 Japanese vessels and destruction of six aircraft. Our entire loss amounted to but three aircraft. On the following day a large four-engine flying boat was intercepted by our forces and shot down. On May 7 Admiral Fletcher's aircraft struck the main body of the Japanese forces in the Louisiade Archipelago off Missima. The new Japanese aircraft carrier, Ryukaku, and a heavy cruiser were sunk. Fifteen bomb hits and ten torpedo hits were reported scored on the Ryukaku, which was turning into wind to launch her aircraft when thus blasted.

She sank in a few minutes with most of her planes on board. The enemy counter-attack which followed was fought off successfully. During this day's fighting more than twenty-five enemy aircraft were downed as compared to our losses of six. Shore-based Army aircraft from Australia assisted in reconnaissance both before and during these attacks and added their fire power to that of the attacking Naval planes. During the afternoon of May 7 Japanese aircraft located and bombed the United States tanker Neosho and its accompanying destroyer U.S.S. Sims in the Coral Sea. The Sims was sunk during the attack and Neosho sank a few hours later as result of damage received during the bombing. A large part of the personnel from the Neosho and Sims were rescued and have reached port. The next of kin of casualties are being notified. On May 8 the same task force again carried the attack to the enemy and succeeded in inflicting serious damage on a second Japanese carrier, the Shokaku, which

was left ablaze as the result of bomb and torpedo hits. During this same engagement the enemy launched a counter-attack with aircraft while our planes were still attacking. Their principal target was the United States aircraft carrier Lexington, flagship of Rear-Admiral A. W. Fitch. In spite of skilful handling, all available fighter protection and anti-aircraft defence, the Lexington was hit by two torpedoes and at least two bombs and was further damaged by several near misses. These attacks were the last action in the Battle of Coral Sea. The crew of Lexington succeeded in putting out the fires and in recovering her aircraft. Several hours after the battle, while steaming at twenty knots, a terrific internal explosion rocked the Lexington causing serious fires to break out in many parts of the ship. It was first thought that the explosion was the result of a "sleeper" bomb. Investigation revealed however that the probable cause was ignition of gasoline vapours which resulted from leaks in ruptured gasoline lines in closed compartments below decks. The crew fought heroically for more than five hours to save the ship, but were at a great disadvantage because the explosion had damaged much of the fire-fighting equipment. Destroyers were sent alongside to assist with their pumps, fire hose and chemical fire-fighting equipment. The wounded were transferred from the burning carrier to destroyers alongside. Finally, with all machinery disabled, the ship stopped, and flames enveloping nearly her entire length, it became apparent that any further attempt to save her was futile, and the Captain ordered the crew to "abandon ship."

Men slid down lines from the carrier's decks to boats from other ships while some crawled aboard life rafts and rubber boats. Ninety-two per cent. of the entire ship's company were rescued and have reached port safely. The only casualties were the result of the battle or the explosion and the resulting fire. The last man to leave his ship was her commanding officer, Captain F. C. Sherman. As he slid to safety down a line from the deck into the water the torpedo warhead locker of the Lexington exploded. After all the men in the water had been rescued the Lexington sank with a final detonation which shook the nearby ships. The attack on Salamaua and Lae and the Battle of the Coral Sea resulted in the disruption of two Japanese attempts to advance to the south-eastward of New Guinea and cost them a total of more than 15 ships sunk including: one aircraft carrier; three heavy cruisers, one light cruiser and two destroyers, several transports and small vessels; severe damage to and probable sinking of one additional cruiser and one destroyer; severe damage to more than twenty ships including one carrier, three cruisers, two aircraft tenders, three destroyers; and the loss of more than one hundred aircraft. The Lexington, Neosho, and Sims were the only United States vessels lost as a result of the action in the Coral Sea, and only minor damage was suffered by other vessels. The next of kin of all casualties in these ships are being notified as information is received."

III.

THE MIDWAY BATTLE.

On July 14, 1942, the following account of the Midway Battle was issued in Washington:

Navy Department communiqué No. 97:

1. Early in June, near the Island of Midway, about 1,100 miles to the westward of Pearl Harbour, units of our Army, Navy, and Marine Corps

joined action with a strong Japanese invasion fleet which was approaching our Midway outpost.

The voluminous reports of the details of the Battle of Midway have been studied and evaluated so that this résumé now becomes possible.

2. After the defeat of the Japanese in the Battle of the Coral Sea between May 4 and May 8, our shore-based reconnaissance aircraft and submarines reported a general withdrawal of enemy naval ships from the south-west Pacific toward Japan. Concentration of enemy naval units made it apparent that large-scale offensive operations were planned by the enemy.

But the exact nature of the plan of attack could only be guessed.

EXPECTED THRUST IN OPEN AREA.

The enemy had learned in the Battle of the Coral Sea that the sea approaches to Australia were strongly defended. It appeared logical, therefore, that the enemy's next thrust would come in some other area—possibly Hawaii, Alaska, the Panama Canal Zone, or even the Pacific Coast of the United States. In accordance with this estimate, United States naval surface forces were deployed in the area between Midway and the Aleutian Islands. Bases in the outlying islands and in Alaska were reinforced by long-range shore-based aircraft. Similar precautionary measures also were taken on the Pacific Coast and in the vicinity of the Panama Canal.

3. At about 9 a.m., June 3, United States naval planes reported a strong force of enemy ships about 700 miles off Midway, proceeding eastward. Nine United States Army "Flying Fortresses" based on Midway immediately were ordered to intercept and attack the approaching enemy. The Japanese force was observed to be approaching in five columns and was composed of many cruisers, transports, cargo vessels, and other escort ships. The Army bombers scored hits on one cruiser and one transport. Both ships were severely damaged and left burning. Some lesser damage was done to other vessels in the formation. Later, during the night, four Navy Catalina flying boats located and attacked the same enemy group by moonlight. These four planes scored two torpedo hits on large enemy ships, one of which is believed to have sunk.

TORPEDO PLANE ATTACK.

4. About dawn on June 4, several groups of Army medium and heavy bombers, and United States Marine Corps dive-bombers and torpedo planes took to the air from Midway to attack the approaching enemy. The results of this attack were as follows:

(a) Four Army torpedo bombers attacked two enemy aircraft carriers through a heavy screen of enemy fighter protection and a curtain of anti-aircraft fire. One torpedo hit on a carrier is believed to have been made. Two of the four bombers failed to return.

(b) Six Marine Corps torpedo planes attacked the enemy force in the face of heavy odds. It is believed this group secured one hit on an enemy ship. Only one of these six planes returned to its base.

(c) Sixteen Marine Corps dive-bombers attacked and scored three hits on a carrier, which is believed to have been the Soryu. Only half of the attacking planes returned.

(d) Another group of eleven Marine Corps dive-bombers made a later

attack on enemy ships and reported two bomb hits on an enemy battleship, which was left smoking and listing.

(e) A group of sixteen United States Army "Flying Fortresses" carried out high-level bombing attacks, scoring three hits on enemy carriers. One carrier was left smoking heavily.

5. Meanwhile, at 6.35 a.m. (Midway time, June 4), shortly after the Marine Corps planes had left Midway to carry out an attack mission, the island itself was attacked by a large group of carrier-based enemy planes. They were engaged by a badly outnumbered Marine Corps fighter force, which met the enemy in the air as he arrived. These defending fighters, aided by anti-aircraft batteries, shot down at least forty of the enemy planes. Several more were damaged. As the result of this fighter defence, the material damage to shore installations, though serious was not disabling. No plane was caught grounded at Midway.

6. The Midway-based air forces had struck the approaching Japanese fleet with their full strength, but the enemy did not appear to have been checked. It was estimated that only ten enemy ships had been damaged out of a total enemy force of approximately eighty ships then converging upon Midway.

7. It was learned later that our aerial attacks had caused the enemy carrier force to change its course. They began a retirement to the north-westward some time between 8.30 and 9.30 a.m. on the morning of June 4. Their complete change of course was not observed by our shore-based planes because the change came after the planes had delivered their attacks and while they were returning to Midway to re-arm.

CARRIER AIRCRAFT LAUNCHED.

8. Meanwhile, United States naval forces afloat were being brought into position. Our carrier-based aircraft were launched and were proceeding to the spot where the enemy's previous course and speed would have placed him had he chosen to continue the assault, as expected. Unaware of the enemy's change of course, one group of carrier-based fighters and dive-bombers searched along the reported track to the south-east until shortage of gas forced them to abandon the search and go into Midway. Some were forced down at sea when they ran out of gas. Most of those forced down were later rescued. The commanding officer of a different flight composed of fighters, dive-bombers, and torpedo planes made an accurate estimate of the situation and concluded that the enemy was retreating. Fifteen torpedo planes from this group, therefore, located the enemy to the westward and proceeded to attack at once without protection or assistance of any kind. Although some hits were reported by radio from these aeroplanes and although some enemy fighters were shot down, the total damage inflicted by this squadron in this attack may never be known. None of these fifteen planes returned. The sole survivor of the thirty officers and men of this squadron was Ensign G. H. Gay, jr., U.S.N.R., who scored one torpedo hit on an enemy carrier before he was shot down.

9. Other carrier-based groups of torpedo planes proceeded to press the attack after the enemy had been located. In spite of heavy losses during these attacks, the torpedo planes engaged the attention of the enemy fighters and anti-aircraft batteries to such a degree that our dive-bombers were able to drop bomb after bomb on the enemy ships without serious

interference. As the result, the Navy dive-bombers scored many hits, and during this phase of the action inflicted upon the enemy the following damage :

(A) The Kaga, Akagi, and Soryu, aircraft carriers, were severely damaged. Gasoline in planes caught on their flight decks ignited, starting fires which burned until each carrier had sunk.

(B) Two battleships were hit. One was left burning fiercely.

(C) One destroyer was hit and is believed to have sunk.

10. Shortly after this battle a force of about thirty-six enemy planes from the undamaged carrier Hiryu attacked the United States aircraft carrier Yorktown and her escorts. Eleven of eighteen Japanese bombers in the group were shot down by our fighters before their bombs were dropped. Seven got through our fighter protection. Of these seven, one was disintegrated by a surface ship's anti-aircraft fire ; a second dropped its bomb load into the sea and plunged after it ; while a third was torn to shreds by machine-gun fire from United States fighter planes. Four enemy bombers escaped after scoring three direct hits.

CARRIER YORKTOWN DAMAGED.

11. Shortly afterwards twelve to fifteen enemy torpedo planes escorted by fighters attacked the Yorktown. Between four and seven of this group were destroyed by our fighters and three were shot down by anti-aircraft fire before they could launch their torpedoes. Five succeeded in launching torpedoes, but all five were destroyed as they attempted to escape. The Yorktown was hit during this assault and put out of action. The damage caused a list which rendered her flight deck useless for landings and take-offs. Her aircraft, however, continued the battle, operating from other United States carriers.

12. While this attack on the Yorktown was in progress some of her own planes located the Japanese carrier Hiryu in company with battleships, cruisers, and destroyers. Our carrier planes immediately launched an attack against this newly located force. The Hiryu was hit repeatedly and left blazing from stem to stern. She sank the following morning. Two of the enemy battleships were pounded severely by bombers and the heavy cruiser was damaged severely.

13. During the same afternoon (June 4) a United States submarine scored three torpedo hits on the smoking carrier Soryu as the enemy was attempting to take it in tow. These hits caused an outbreak of fresh flames which engulfed the carrier and forced the crew to abandon ship. At about sunset heavy explosions and huge billows of smoke were observed. The Soryu sank during the night.

BOMB ATTACK FOLLOWS.

14. Just before sunset (June 4) United States Army bombers delivered a heavy bomb attack on the severely crippled and burning ships. Three hits were scored on a damaged carrier (probably the Akagi) ; one hit was scored on a large ship ; one hit on a cruiser, which was left burning, and one destroyer was damaged and believed to have sunk.

15. The situation at sundown on June 4 was as follows :

(A) United States forces had gained mastery of the air in the region of Midway.

(B) Two carriers, Kaga and Akagi, had been hit by many bombs and

torpedoes from Army planes and carrier-based naval aircraft in the morning and the Akagi had been further damaged by Army aircraft in the late afternoon. One of these two carriers was reported by Ensign Gay to have been shelled and finished off by a Japanese cruiser. Both enemy carriers sank or were sunk by the Japanese before morning.

(C) The Soryu had been hit heavily by Marine Corps dive-bombers, Army bombers, carrier-based planes, and a submarine. She sank during the night.

(D) The Hiryu had been put out of action by carrier aircraft after her own planes had damaged the Yorktown. The Hiryu sank early the following morning.

(E) Two enemy battleships had been damaged, one severely.

(F) One enemy destroyer had been sunk.

(G) One enemy transport and several other ships had been damaged.

(H) The U.S.S. Yorktown had been put out of action.

SUBMARINE SHELLS MIDWAY.

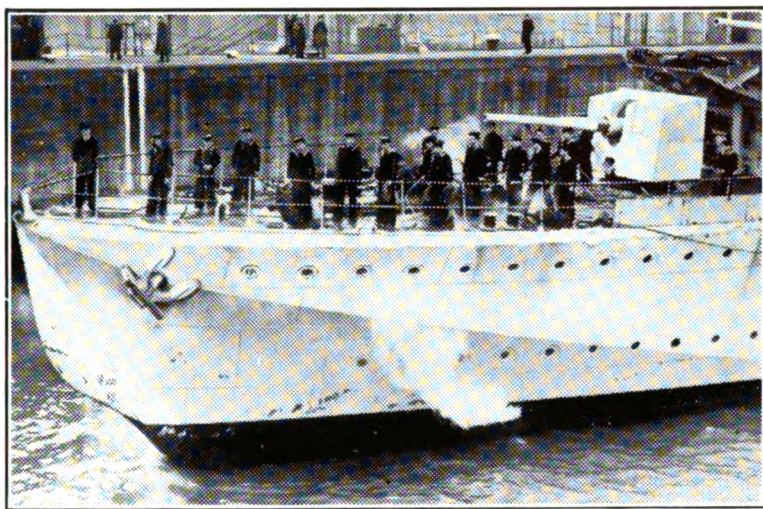
16. Early in the morning of June 5, an enemy submarine shelled Midway briefly but caused no damage. Our shore batteries returned the fire. At dawn our forces were marshalling their strength for further assaults against the enemy fleets which now had separated into several groups, all in full retreat. Unfavourable flying weather made search to the north-west of Midway difficult and hazardous, but a flight of United States Army "flying fortresses" managed to contact an enemy contingent of battleships and cruisers to the westward of Midway. They attacked and scored a direct hit on the damaged cruiser. Another bomb damaged the same cruiser's steering gear. She was last observed listing badly and turning in tight circles. This attack was followed quickly by a second Army Air Force attack which scored a hit on the stern of a heavy cruiser. Meanwhile, at about noon (June 5), United States Marine Corps aircraft located the damaged cruiser and delivered one direct hit.

17. In the afternoon of June 5, Army "flying fortresses" attacked enemy cruisers again and scored three direct hits upon one heavy cruiser. On the return trip, one of these planes was lost; a second was forced down at sea fifteen miles from Midway. All except one of the crew of the second plane were rescued.

WEATHER HAMPERS SEARCH.

A local bad weather condition to the north-west of Midway hampered the search operations of our carrier planes which were seeking the enemy in that area. Throughout the night of June 5-6, our aircraft carriers steamed to the westward in pursuit of the enemy.

18. Early on the morning of June 6, a search by carrier aircraft discovered two groups of enemy ships, each containing cruisers and destroyers. Between 9.30 and 10.00 a.m. our carrier planes attacked one group which contained the heavy cruisers Mikuma and Mogami and three destroyers. At least two bomb hits were scored on each cruiser. One of the destroyers was sunk. The attacks were carried on until 5.30 p.m. The Mikuma was sunk shortly after noon. The Mogami was gutted and subsequently sunk. Another enemy cruiser and a destroyer also were hit during these series of attacks.

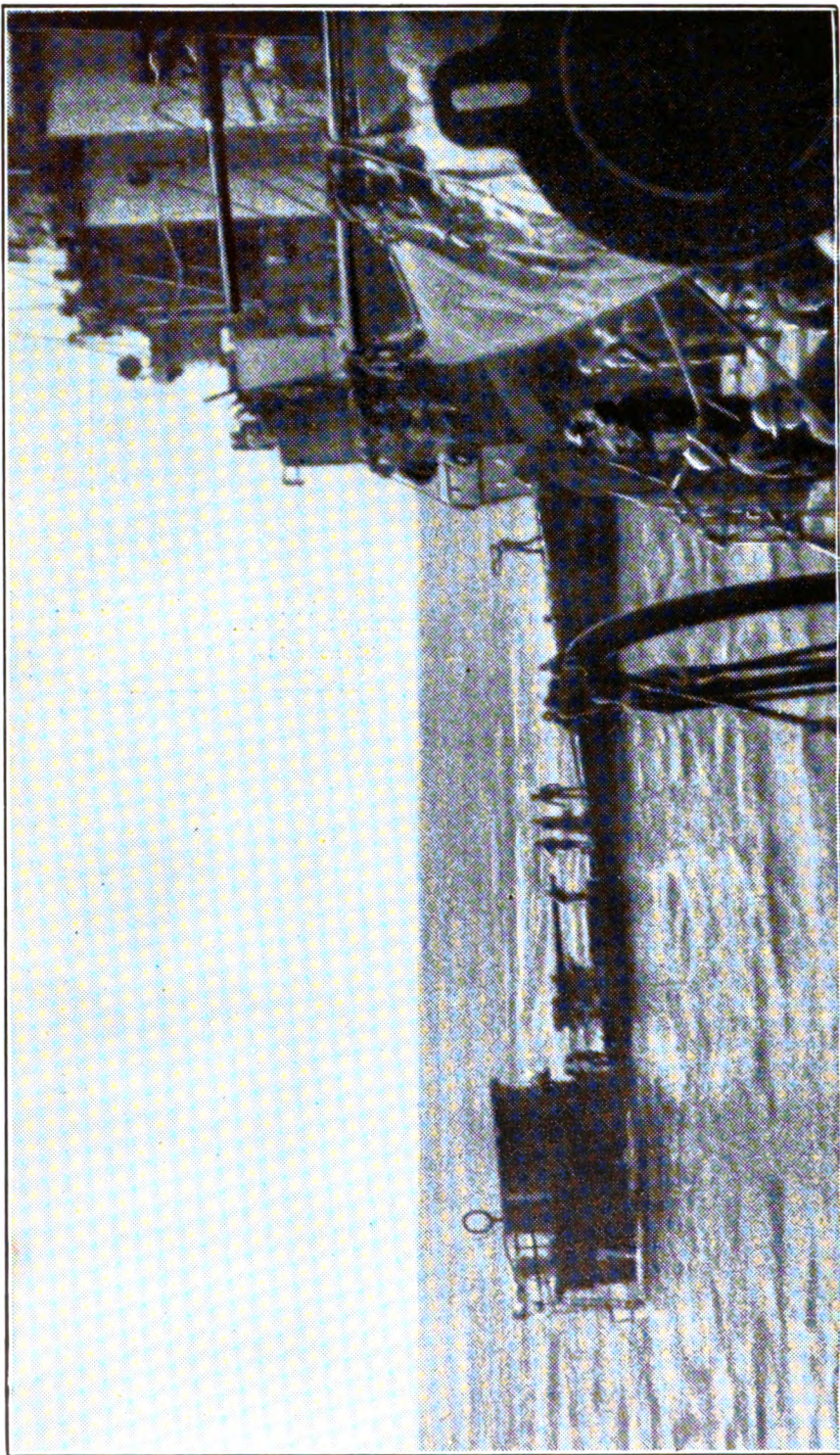


H.M.S. Hesperus after ramming a U-boat.

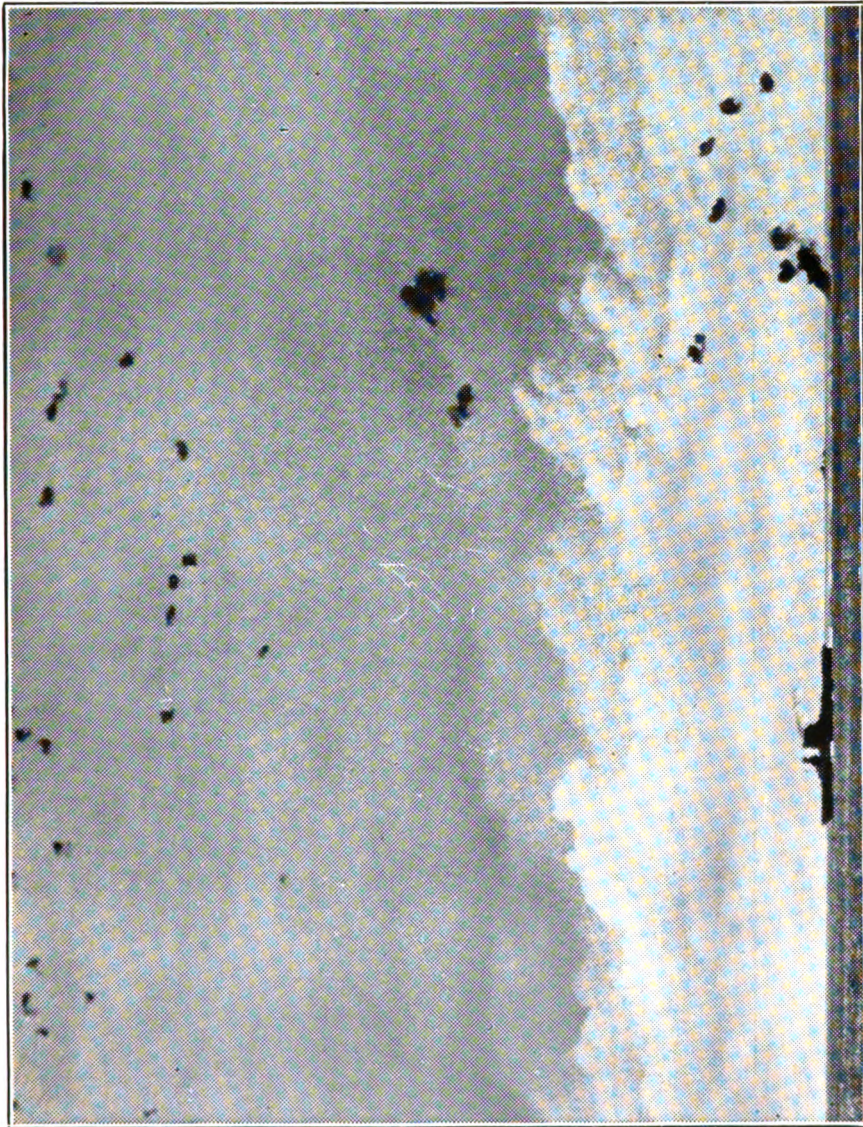
(Official Photograph. Crown copyright reserved.)



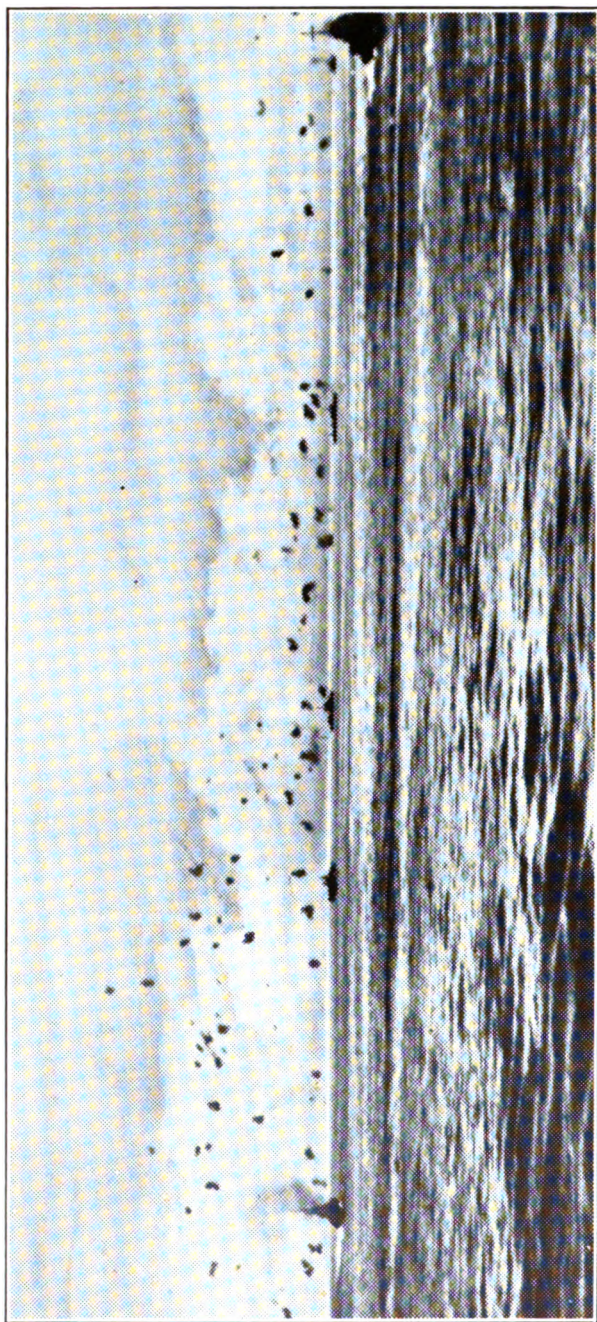
A coastal convoy, protected by barrage balloons, about to sail.



H.M.S. Iturriel rescuing crew of Italian submarine Cobalto, as she sinks.



A Japanese air attack on an American convoy in the Pacific.



Japanese air attack on American warships in the Solomons.

19. It was during this afternoon (June 6) that the United States destroyer Hammann was torpedoed and sunk by an enemy submarine. Most of her crew were rescued. The Hammann was the destroyer announced as lost in Admiral Nimitz's communiqué No. 4 (June 7, 1942).

GENERAL TINKER'S PLANE LOST.

20. After June 6, repeated attempts were made to contact the remainder of the Japanese invasion fleet, but without success. It was on June 9, while one of these searches was being carried out by a group of long-range Army medium bombers under the command of Major-General Clarence L. Tinker, U.S.A., that the plane carrying General Tinker was forced down at sea and lost.

21. The following is a recapitulation of the damage inflicted upon the enemy during the Battle of Midway :

(A) Four Japanese aircraft carriers, the Kaga, Akagi, Soryu, and Hiryu were sunk.

(B) Three battleships were damaged by bomb and torpedo hits, one severely.

(C) Two heavy cruisers, the Mogami and the Mikuma, were sunk. Three others were damaged, one or two severely.

(D) One light cruiser was damaged.

(E) Three destroyers were sunk and several others were damaged by bombs.

(F) At least three transports or auxiliary ships were damaged, and one or more sunk.

(G) An estimated 275 Japanese aircraft were destroyed or lost at sea through a lack of flight decks on which to land.

(B) Approximately 4,800 Japanese were killed or drowned.

22. Our total personnel losses were 92 officers and 215 enlisted men.

ADMIRAL NIMITZ IN COMMAND.

23. Our forces fought under the command of Admiral Chester W. Nimitz, U.S.N., Commander-in-Chief of the Pacific Fleet. Other officers who held important commands during the battle were Lieutenant-General Delos C. Emmons, U.S.A., commanding general, Hawaiian Department ; Major-General W. W. Hale, U.S.A., head of the bombing command of the Army Air Force in Hawaii, and Brigadier-General Henry K. Pickett, U.S.M.C., commander of U.S. Marine Corps forces in the Hawaiian area.

24. Among the officers who held important commands at the scene of the action were Major-General C. L. Tinker, U.S.A., commander of the Army Air Force in Hawaii, General Tinker was lost in action. Vice-Admiral, then Rear-Admiral F. J. Fletcher, U.S.N. ; Rear-Admiral R. A. Spruance, U.S.N. ; Rear-Admiral T. C. Kincaid, U.S.N., and Rear-Admiral W. W. Smith, U.S.N., had commands at sea throughout the action. Captain C. T. Simard, U.S.N., had command of the naval air station at Midway. Colonel Harold D. Shannon, U.S.M.C., was the commanding officer of ground troops at Midway. Lieutenant-Colonel W. C. Sweeney, jr., U.S.A., commanded a formation of heavy Army bombers.

25. The Battle of Midway was a complex and widespread action involving a number of engagements lasting more than three days and nights. Even our active participants in the numerous attacks and counter-

attacks are unable to give confidently an accurate account of the damage inflicted by any one group in the many individual and unified attacks of our Army, Navy, and Marine Corps personnel.

IV.

COLONEL KNOX'S REVIEW.

In a speech delivered on December 1, 1942, at the Convention of the National Association of Manufacturers—known as the "War Congress of Industry"—Colonel Knox, the Secretary of the Navy, reviewed the United States first year at war as follows:

(Shortened version issued by the U.S. Office of War Information.)

"I am gratified to have this opportunity to meet in person, you men who are commanders-in-chief of our shock troops of production—you have made it possible for our Admirals at sea and our General in the field to give the order to attack for which you have been waiting. At the year's end we are organised, we are producing, we are fighting, and we are attacking. I believe I can safely say that we have had a good beginning, thanks in no small part to you. But we must not forget it is only a beginning.

"And there are vast areas to reconquer in this war—in the Pacific, in Europe, in Asia, and in Africa. American fighting men once again will march on liberated soil and on enemy soil. For those men are on the way! And millions will follow until this job is finished everywhere. . . .

"There is not one among us who does not realise that more will be expected of us in 1943. We will be asked both to give more and to give up more. Changes which took place in 1942 were but forerunners of what is to come. . . .

"The changes which are ahead of us will mean that we will all live and work much closer to the war effort. If, as some say, we have only been ankle deep in the war this year, we will be up to our necks in the year ahead—in what Winston Churchill called that 'stern and terrible year.' And until we are in this thing up to our necks we cannot hope to end it.

"I have said we have made a good start. In 1942 your Government will have spent on munitions and war construction alone the staggering total of 46,000,000,000 dollars. That is at the rate of approximately 130,000,000 dollars every day. In 1918 we spent about 15,000,000,000 dollars. This year's figure of 46,000,000,000 dollars is approximately 14,000,000,000 more than the entire direct cost of the first world war, including 1,000,000,000 dollars loaned to our allies. But stupendous as those figures may sound, next year we will spend for munitions and war construction in excess of 70,000,000,000 dollars, or more than 200,000,000 dollars a day. . . .

"And yet next year's total in dollars will by no means tell the whole story. For a much larger proportion of next year's production will be combatant war material than in 1942. . . . On Armistice Day in 1918, after 19 months of war and four years of production for our allies, our soldiers in France were still firing guns and flying planes manufactured, not by us, but by our allies. In December, 1942, we have not only equipped a mighty army and built a mighty navy, but already we are furnishing arms to our allies everywhere.

"The tide of production is rising relentlessly. Twelve billion dollars in 1941, 46,000,000,000 in 1942, 70,000,000,000 plus in 1943. By next December it will be a torrent.

"There have been mistakes, and many of them. At first we were short of facilities; now we are short of materials; soon we may be short of man-power. The programmes have got out of balance. There is too much of this and not enough of that. The exigencies of the military situation have been making and will continue to make abrupt changes necessary almost from day to day, for there are no constants in this war except the need for enough of everything to anticipate every contingency. And that is impossible. So lesser needs to-day may become greater needs to-morrow as the scene changes. When there is not enough of anything, first things must come first. . . .

"As I say, there have been many mistakes . . . but contrasted to what has been accomplished, I marvel that there have not been more.

"We have maintained our freedom and our solvency at home. We have an army in the South Pacific; an army in Britain and an army in Africa, and we equipped them. We have a navy on all the seas, and it has no apologies for its performance to date. We have mounted offensives in two hemispheres.

"And the first anniversary of the war is still to come! Yes, I think as long as we do not overlook our failures, there is nothing very immoral about taking a little comfort from our successes. I have said it before and I will again risk the assertion that in view of the complexities and enormity of the task, to date this has been America's best-run war. . . .

"But production for war is but another way of saying production for killing, and killing, God forgive us, is the final measurement of achievement in the barbarous business in which we are all at present engaged, to the end that it shall not happen again.

"Since December 7, 1941, the latest published figures show that our army and navy have lost in all operations approximately 50,000 men killed and missing. This includes some 30,000 Americans killed or missing in the Philippines. The Japanese of course do not publish their casualty figures, and we could not trust these figures if they were published. It is estimated by our Intelligence, however, that since December 7 and up to November 25 this year, the Japanese in all theatres have lost in killed or permanently injured roughly 250,000 men. Of this total about 37,000 men killed or incapacitated were members of the Japanese navy, or approximately 10 per cent. of the estimated Japanese naval personnel. Our own naval losses have been about one per cent. of our personnel strength. Estimates of our comparative loss and damage of ships and planes are, we believe, equally encouraging. . . .

"On the whole our naval ship production has also presented an encouraging picture. We have a larger and more powerful navy measured in tonnage, air power, fire power, or anything else than the day before Pearl Harbour or the day after Pearl Harbour. Production records have been broken on almost every type of craft, and I might add that the navy uses more than 150 different types. I think you would like to know that private companies and Government yards which are building combat ships are setting records equal to anything now being achieved in production of merchant ships, but as I say we are obliged constantly to respond to strategic necessity, and put first things first—we have to readjust our programme and accelerate some types at the expense of others in ever-

lasting competition for materials and fittings with the result that we are still woefully short on some urgently needed types, particularly escort vessels. And we might as well face the hard fact right now that we have a tough period directly ahead of us in the Atlantic. The operations in North Africa have tremendously increased the navy's task. With convergence of convoy routes at the western end of the Mediterranean, the targets are multiplied in the very front yard of German submarines and aeroplanes. We know they have a large and growing U-boat fleet in the Atlantic and more in training in the Baltic. We have made a good start in North Africa. We may have to pay the price for it and we would do well to prepare ourselves for losses at sea from submarine attacks in the next four or five months.

"Yes, December has come again and a year is gone—a year of wrath, and work, and worry. The horizon is brighter than it has been since that dread day three years ago when Hitler unleashed his mad furies on the world. What was a heroic but hopeless siege at Stalingrad is now a great Russian offensive. And in the north the unconquerable Red Armies are rolling the invader back. In the South Pacific we have won and held a precious foothold against enormous odds. The seas about are Japanese graveyards. Egypt is liberated and remnants of the vaunted Africa Corps are preparing for the last stand. French North Africa is in our hands and in Tunisia the Axis hour draws near. Italy totters.

"But most of all the masks are off at last. The soul of France which never bowed to defeat is free again; free to fight the common foe again. A few days ago in one historic holocaust, unhesitating Frenchmen blasted their base at Toulon; evaded Hitler's clutching fingers and consigned their fleet to the depths of the sea.

"Stricken France begged for our help in June, 1940. We could not respond, but now we can and we say to the French, 'take heart; the aid you asked for is at hand; we are coming and we are very near!'

"Everywhere Hitler has sown the seeds of hate; everywhere he will reap the whirlwind.

"But brighter skies are only an augury of victory. We are embarked on a long and hazardous journey. Our part of the journey has just begun. The going will be rough, cruel, and costly. There are calm and steady hands on the wheel. You who have answered our every demand so well will have to answer many more with the same patient understanding, the same sober conviction that our prize knows no price.

"I hope we may say, when the day of victory comes, as come it will, that we have kept the faith."

V.

SURVEY OF U.S. NAVAL ACTIVITIES, 1941-1942.

The following was issued at the end of 1942 by the U.S. Naval Headquarters in London:

Before Pearl Harbour the United Nations commanded the Seven Seas. In the first six months after Pearl Harbour the United Nations had largely lost control of the Mediterranean, the eastern part of the Indian Ocean, and a great part of the Pacific.

Pearl Harbour was a disastrous blow to the United States. One hundred and fifty-odd Japanese planes in the space of three hours had so crippled the United States Fleet and the defensive works of Pearl Harbour

that it would have been a fairly easy task for the Japanese to have captured the Hawaiian group. The magnitude of the disaster will probably not be realised fully until the history of this war has been written and re-written.

The Arizona had been sunk, the Oklahoma capsized ; the California, West Virginia, and Nevada badly damaged ; the Tennessee, Maryland, and Pennsylvania were temporarily out of action. The battleships were indeed hard hit. Among the cruisers the Honolulu, Raleigh, and Helena were out of action, as were numerous other miscellaneous craft. It was fortunate for us that no aircraft carrier was in Pearl Harbour at the time. Hard hit though the United States Fleet was, it has come back fighting. In 1941 the North Carolina and Washington were commissioned, and since Pearl Harbour the South Dakota, Indiana, Massachusetts, and Alabama have been commissioned and the Iowa and the New Jersey have been launched. Several aircraft carriers have been launched and several commissioned. Four cruisers have been commissioned and nine others launched. While we have lost twenty-odd destroyers, several times that many have been launched, and the rapidity of the destroyer launchings are one of the bright spots in our building programme.

So much for ships and damage. At sea in the Pacific there have been defeats and there have been great victories : February 11, 1942—the Java Sea battle ; May 4–8—the Coral Sea battle. Neither of those two can be termed a victory, maybe they are defeats, but we did have an opportunity to indicate an aggressive spirit against the enemy. Then came the battle of Midway, June 3–5 ; and simultaneously, from the North, the battle of the Aleutians. The battle of Midway was definitely a victory and, even though all of the Japanese units were not destroyed, a great loss was inflicted on their fleet. Their progress in the Aleutians was never great and they have now been driven back to Kiska.

Looming large in our immediate recollection are the battles of the Solomons, August 7–9 ; the battle of Savo Island, where four Allied cruisers and one transport were sunk, August 24–25 ; the battle of the Eastern Solomons, where United States carriers severely damaged one Japanese battleship, several cruisers, two carriers, one destroyer, and several additional ships ; October 11–13, the battle of Cape Esperance, where a Japanese task force was intercepted and they lost two heavy cruisers, one light cruiser, and three destroyers. The United States lost one destroyer. Then on October 25–26 was the battle of Santa Cruz, where two Japanese destroyers were sunk, two battleships, two carriers, three heavy cruisers, one light cruiser, and additional ships were badly damaged. In this battle the United States lost a carrier, a destroyer, a tug, and a patrol boat.

November 13–15 marks Admiral Halsey's battle of Guadalcanal. In this battle the Japanese lost two battleships, eight cruisers, six destroyers, twelve transports ; and severely damaged were two battleships, one cruiser, and six transports. The United States lost two light cruisers, seven destroyers, and one heavy cruiser damaged. To-day the United States holds Guadalcanal.

On November 8, United States Naval Forces took part in the North African expedition. We lost five transports and suffered damage to several other ships, but, as you know, the expedition has been successful.

CHAPTER IX.

SEA POWER AND THE AIR WEAPON.

A book by Major Alexander Seversky which has recently appeared under the title of "Victory Through Air Power" has attracted wide attention, particularly, perhaps, amongst those who have not previously made a study of the art of war. The book appears to have been written with the worthy object of showing the advantages of air transport and the long-distance bomber aeroplane, but it puts forward claims for the strategical achievements of aircraft which few will endorse, and it even contains a chapter on what is called the "Twilight of Sea Power." Sea power is spoken of in terms of the strength of navies and, because a few men of war have been sunk from the air, a claim is put forward that the days of sea power are numbered.

Now sea power never has been, and never will be, measured solely by the strength of navies. Sea power is the ability to control sea communications, to keep the sea routes of the world open to our own shipping, and to deny the use of them to the enemy. This involves many things. First, a large Mercantile Marine with a seafaring population, large shipbuilding capacity, fuel for the ships, and last but not least, bases all over the world. Secondly, it involves the provision of sea and air forces to protect the sea routes along which the Mercantile Marine travels from attack by enemy surface craft, by air, and by under-water enemies. Whether these routes are protected by surface forces or air forces, or both, is beside the point. Many forms of protection are required and all, including those which are employed in protecting our bases, are exercising the function of sea power.

A scattered empire, such as the British Commonwealth, can only exist by sea power, since all communication between the various parts is dependent on the sea, and the existence of a large population in these islands is entirely dependent on the security of its sea communication. Sea power is not, therefore, just a question of ships and guns. It is something inherent in the life of the whole community. It is no disparagement of the magnificent achievements of Air Forces to say that in this sense there can be no such thing as air power in these islands; for aircraft cannot transport, except to a very limited extent, and every aircraft that flies is dependent on sea power for its fuel and for the greater part of the material used in its construction, besides in most cases for its transport overseas. Similarly, it is a self-evident fact that no Army can leave these shores and be transported anywhere except over routes controlled by sea power.

When, therefore, sea power is mentioned it must be remembered that it is the basis on which all operations by Military and Air Forces depend. In these islands, Military and Air Power should not be spoken of in the same breath as sea power. Armies and Air Forces are weapons to be exploited to the utmost by sea power, from which they derive their being. It may be argued that this is the purely British attitude dependent on the geographical position of the British Isles. It is perfectly true that the necessity for sea power depends on geography, but the exploitation of military forces over-sea from any country depends on sea power, and air forces without sea power are necessarily confined and limited in their striking effect. How, for instance, could the United States forces operate in the Western Pacific without sea power behind them? Sea power is

necessarily the measure of their offensive effort as it is of Japan in the area she commands.

It is quite evident, however, that the air weapon exercises a very large and often a predominant influence on tactics both on land and sea. Instances can be multiplied where the lack of air support, or its possession, has turned the scale in battles, both ashore and afloat. The Norwegian campaign was called off mainly on account of Britain's inability to give sufficient air support to her troops. It is common knowledge that the gallant enterprise of the Prince of Wales and Repulse was defeated through lack of air cover. The success of the German drive into France was largely influenced by the air weapon, and the retreat and advance of the Eighth Army in Egypt was largely dictated by the air support available. The effect of the air weapon on tactics is enormous, but how has it affected strategy in the large sense? From time immemorial British strategy has been based on sea power; is there any warrant to base it on anything else to-day? It is proposed to examine these points in the light of available knowledge.

It is not necessary to emphasize to British people that their existence and the continuation of their war effort depends entirely on their control of sea communications bringing in supplies—i.e. sea power. This must be so until the day arrives when air transport becomes capable of handling more than a mere fraction of imports. In 1938 approximately 5,000,000 tons dead weight per month was imported into Britain and a very large percentage of this is essential to our war effort. Assume, for the sake of argument, that only half of this is essential to the war effort, i.e. 2,500,000 tons of imports per month. The figures are so astronomical that there is no need for meticulous accuracy, but if the average distance to be flown in transporting these imports is taken as 3,000 miles and that one aircraft can carry 5 tons of cargo on an import voyage twice a week, it would take no less than 60,000 aircraft to handle this task. Further, the weight of petrol expended in this mighty effort would be something of the nature of 60,000,000 tons a year, a volume many times more than the total amount of oil fuel used by the Mercantile Marine of the whole world. Heavier pay loads would mean a smaller number of bigger aircraft, but the petrol consumption would be little less. Add to this the necessity of reserve and replacement aircraft and consider the personnel required not only for flying but for servicing and manufacturing this large fleet and some idea is gained of the magnitude of the problem. No doubt great strides will be made in air transport, but it must be obvious that it cannot compete with all needs in the foreseeable future and that until it can be made as economical as is sea transport dependence on the latter will remain.

The time honoured conception of British strategy is that sea power puts pressure on the enemy by means of blockade, and in addition "keeps the ring" by controlling as much of the sea routes of the world as possible and enabling military forces (now allied with the air) to strike at will. Military and air forces act as the spearhead of sea power. Sea power enables them to strike where the enemy is weakest; but apart from blockade and the destruction of enemy vessels and aircraft which attack sea communications, navies make no positive contribution to the defeat of their enemy. For this reliance is placed on the occupation of enemy territory by armies, and it may be that the bombing of enemy industrial resources from the air will make a considerable contribution to this end.

British sea power has always been exercised by means of a covering

force behind which the sea routes are kept open by comparatively weak surface forces. This has been so throughout history, but it is only necessary to go back to the war of 1914-18 to see how the Grand Fleet in the North Sea restricted the activities of the German High-Sea Fleet and enabled the sea routes to be controlled by comparatively weak surface forces, any of which could have been mopped up by the High-Sea Fleet, or any considerable part of it, at large in the Atlantic. It is necessary to emphasize this because in this war, as in the last, the defeat of the British main covering forces would open a threat to all the Empire sea routes greater by far than the enemy's under-water or air weapons ; for an enemy fleet with freedom of action would mean the *total* stoppage of trade in the area it was able to command, not merely the spasmodic damage that the enemy is able to inflict on it by his U-boat and air attacks.

In considering the effect of the air weapon on sea power, it is convenient therefore to consider three aspects : (1) blockade, (2) the main Fleet or covering force, (3) all those other minor forces which are enabled to exist and carry out their functions under cover of the main Fleet. Take first blockade. The circumstances of the present war, in which every new move on the part of Germany has represented an effort to overcome the British blockade by conquering new territory to provide herself with the resources of which opposing sea power has deprived her, should not be allowed to detract from blockade's importance. Little is made public about the blockade, but it is known from the first to have been effective. It has necessarily cut off the enemy from some essential sources of supply and, to put it at its lowest, it must have disrupted his peace-time economic life. In the war of 1914-18 large forces of cruisers were continuously strung out to the north of the Orkneys for no other reason than to intercept enemy blockade runners. Is it not obvious that the task of such forces could have been immensely simplified by a few patrols flown daily over the immense areas in which these ships operated ? Blockade runners were sometimes successful in 1914-18. To-day air reconnaissance makes their task infinitely more difficult. And what has the enemy's air to contribute to what may be called counter-blockade ? Details of his attacks on our trade from the air are not divulged, but it is safe to assume that they are spasmodic and confined to ships in areas where fighter protection is difficult to provide. In the Atlantic area the geographical position of the British Isles makes the task of protecting our trade from air attack much simpler than that of the enemy. On balance it is evident that the blockade function of sea power has been immensely strengthened by the advent of the air weapon.

Now consider how the work of the British main fleet has been affected by the air weapon. The chief duty of the Home Fleet is to contain the enemy fleet in its bases, to watch it continuously and to attack enemy forces who attempt to break out and to interfere with minor allied forces protecting the trade routes. In this duty it has been conspicuously successful. Based on ports within easy bombing range of the enemy, it has used these ports with impunity and with negligible casualties, and it has been continuously reinforced by new construction built under the very nose of the enemy air force. True, there have been instances, such as the escape of the German battle cruisers from the North Sea, when the Fleet had not been able to intercept the enemy ; but, in the main, covering forces have been able to carry out their function and it can be said at once that this has been rendered possible chiefly by the air weapon. In the last war the

British Grand Fleet had the comparatively easy task of watching and intercepting an enemy based on a short coastline which could be watched by submarines. To-day the Home Fleet has the infinitely more difficult task of watching a coastline several thousands of miles long and an enemy dispersed and hidden in secluded inlets. How could this be done without the assistance of the air weapon? None can deny that in the matter of the British Main Fleets, the maintenance of sea power has been rendered infinitely easier by the air weapon.

Now turn to the other forces which, under cover of the Main Fleet, are carrying out their innumerable functions exercising sea power all over the world—the forces protecting convoys, patrolling for raiders and supply ships, and intercepting blockade runners. To all these forces the air weapon is an efficient and indispensable ally. That the air is assisting in the defence of ocean convoys both by shore-based and carrier-borne aircraft is well known, as also that fighters, both shore-based and carrier-borne, are daily giving surface ships better and better protection from the enemy's air attack and at a greater range from friendly bases. Consider how even a little air reconnaissance would have assisted in such enterprises as the hunt for the *Emden* in the last war, which necessitated the use of more than forty surface ships. How could raiders in the outer oceans be tackled to-day without it? It cannot be denied that in reconnaissance alone, the air forces have been exploited much more effectively in defence of than in attacks upon sea power. The Royal Navy is often accused of living in the atmosphere of the last war, but it must be admitted that as regards the considerations of those days, the advent of the air weapon has facilitated the control of the oceans of the world and has rendered sea power more, and not less, efficient.

But what, asks the critic, of the control of narrow waters? Has not the air weapon transformed the situation in the Mediterranean and does not the air dominate the routes through this sea? The answer to this appears to be that sea power is never absolute and has always had to be fought for. It is also forgotten that political conditions in the Mediterranean have changed for the worse since 1914–18. Italy now challenges British sea power mainly by the air weapon. It is at least open to doubt whether with Italy an enemy as well as Austria it would have been possible for the British to have controlled the Mediterranean in 1914–18 without the assistance of the French. It is not simply the air weapon but political conditions which have changed the Mediterranean scene. But if Allied control of the Mediterranean was in doubt, surely it is evident that it is possible to achieve all that is necessary by fighting for it. The Allies' aim is to pass ships through the Mediterranean, the enemy's to control the short passage from Italy to Tunisia. Already, by the advance of the Eighth Army and the occupation of Algeria, the Allies have been able by the fighter protection they can command, to control nine-tenths of the sea route through the Mediterranean, and at the same time to dispute enemy control over the narrow central section. This is a fine example of the re-assertion of sea power. The final result is hardly in doubt, but whatever happens it is safe to assume that the pressure of sea power in this area will deal harder blows to the enemy than he is able to inflict.

It is natural for the critics of a policy based on sea power to point to British failures in Greece and Crete. It is easy to speculate on what might have happened if the British forces sent to Greece had been used to strengthen the advance along the North African coast and to re-assert sea

power in the Eastern Mediterranean, but all strategy is to some extent dominated by political considerations. The easy course would have been to leave the Greek allies in the lurch, but moral considerations also come in, and who will say that the British cause in the final reckoning will not have been immensely strengthened, though at the expense of a temporary loss of sea power, by this forlorn hope against the military might of the Axis Powers? Nevertheless, it must be noted that in spite of losses, sea power did succeed in transporting a considerable force over this disputed area and in withdrawing the vast majority of it. This was the first experience of air-borne invasion, and it is certain the experience gained was turned to good account. As it was, sea power did succeed in annihilating the sea-borne invasion and eventually in withdrawing the majority of the defending army.

Turning to the Pacific war, the critic is able to point to the various engagements between the Americans and Japanese in which each side suffered considerable losses in surface ships from the enemy's aircraft without contact being made between their navies, and seemingly a position of stale-mate has resulted. The point to be remembered here is that the American air weapon was safely transported to the scene of operations over many thousands of miles by sea power. Further, it should be remembered that American surface forces had been so crippled by the treachery of Pearl Harbour that they were at no time in a position to take on the superior Japanese surface forces available. In the final reckoning, when the air forces of one side are eliminated, it will always be the surface ship that commands the field. Admiral Nimitz tells us that the result of the action off Guadalcanal on November 13-15th, 1942, when neither side employed aircraft carriers and each relied on the air weapon flown from shore bases, justified the American faith in battleships. The surface ship may quite possibly have to be held back till the air weapon of the enemy is reduced in strength, but once this phase is reached the superior surface force will win the day. Already, in the Pacific, the Japanese are losing many men-of-war and invaluable merchant tonnage, and it is only a question of time before the American Forces will be able to re-assert themselves in this area.

It is often necessary for air forces to be transported to the theatre of operations by sea power and by the establishment of local air supremacy to re-establish control over an area of the sea previously commanded by the enemy. This indeed provides the chief problem for the United Nations in their offensive operations which are to come. At what distance from an enemy coast is the existence of surface transport threatened by the air weapon? Will a landing on an enemy coast be rendered impossible by the air weapon? These questions are mainly tactical, but apart from the strength of the escorting forces, as far as can be foreseen the question resolves itself into the degree of air supremacy which the attacking force is able to achieve over the battle area, and this in turn depends on the strength of the defending fighter force and the distance of the defender's fighter aerodromes from the position chosen for the landing. All sea control requires fighting for. The attack holds the advantage of the possibility of surprise and of being able to make the best use of the hours of darkness in the approach, and there is no reason to suppose that a force properly supported by ship-borne aircraft will not be able to fight its way through. There may be areas adjacent to the enemy coasts where it is inadvisable to send battleships, more restricted areas where it is

inadvisable to send cruisers and still smaller areas where destroyers and small craft are seriously threatened from the air, but there is no part of the world where domination of strategic areas cannot be fought for and won by the combined action of surface and air forces.

The outstanding strategic factor in favour of the United Nations is that they control at least nine-tenths of the sea area of the world and that they are possessed of bases from which to maintain and exploit this advantage. In such areas where control is in doubt, the air weapon is of the greatest assistance and sometimes the deciding factor in establishing control. The fight for sea power goes on, new methods of defence against air attack appear daily, but the advent of the air weapon has not made the task of maintaining sea power more difficult ; rather on balance it is proving an assistance. The fight which surface ships and their allies in the air are waging to-day is comparable with the first appearance of cannon at sea, the advent of the torpedo and the appearance of the submarine. To each new weapon which threatened sea power the antidote has been developed as is being done with the air threat to-day. Such measures as anti-aircraft gunnery, radio-location, kite-balloons, etc., have not defeated the air weapon, but they have made air attack infinitely more difficult and less effective and are therefore contributing their part to the fight for sea power.

Until sea transport can be replaced by air transport complete dependence must be placed on the former. It is true that this is not so with some other nations to anything like the same extent as in these over-populated little islands. The necessity for sea power is conditioned by geography. In other, more self-contained countries, the necessity for sea power depends on what is necessary for their over-sea trade and for their expansionist ambitions. Sea power is, therefore, for the British Empire something essential for the defence of its citadel, and it is as important to safeguard it as to defend the shores against invasion. It is also, if used rightly, something very precious which the Allies' enemies have not got or have only to a very limited extent. For this one reason alone it is the weapon above all others that should relentlessly be employed against them.

By the control of nine-tenths of the sea surface of the world, sea power opens up infinite possibilities for offensive action. The enemy can be hit where he is weakest ; it provides the inestimable advantage of the possibility of exploiting surprise ; it forces on the enemy the necessity of defending long lines of coastline which may never be invaded. It is essential that Allied strategy should be based on this unique gift of geography and of past endeavour. What is the alternative ? If interpreted aright, it appears that critics like Major Seversky would advocate the restriction of sea power to what is essential for the support of the air weapon and to concentrate effort into the air weapon in order to attack the enemy's industrial resources by what is called " elimination."

To begin with, it is not known whether such a thing as the " elimination " of enemy resources is at all within the limits of possibility. Britain's not inconsiderable experience of being bombed hardly suggests it. In the last resort, certain essential stores and even industries can be put underground, but what in fact was the British loss of production, even in places like Coventry, said to have been eliminated ? It is to be hoped that Allied air attack on Germany is proving far more effective than the raids on Great Britain, but the actual effect on the enemy's morale has yet to be gauged. The feature of most air raids is the remarkably small loss of

life inflicted. That they had any real damaging effect on the morale of the British nation is doubtful ; in fact, the reverse seems to have been the case. Why should the enemy be credited with loss of morale from the same cause ? Destruction of resources and compelling surrender by fear may be possible, of course, and if it is so, well and good, but it has yet to be proved. A policy based on this assumption could be nothing but a gamble and as a gamble it must be bad strategy. But there is a greater danger in any restriction of sea power in favour of the air weapon, and that is that once restricted it could not be controlled. The risk would have to be faced of the possibility of sea power being destroyed before elimination by the air weapon had been achieved. Also, by restricting sea power to supplies, the military effort might be jeopardized. As far as is known at present, there is no way of enforcing surrender on any enemy without starvation or the occupation of his country. The restriction of sea power at the expense of air attack gambles with this fundamental truth. For the Allies sea power is necessary to occupy any enemy country. Any restriction of it wastes military effort and gambles on the possibility that occupation by armies will not be necessary.

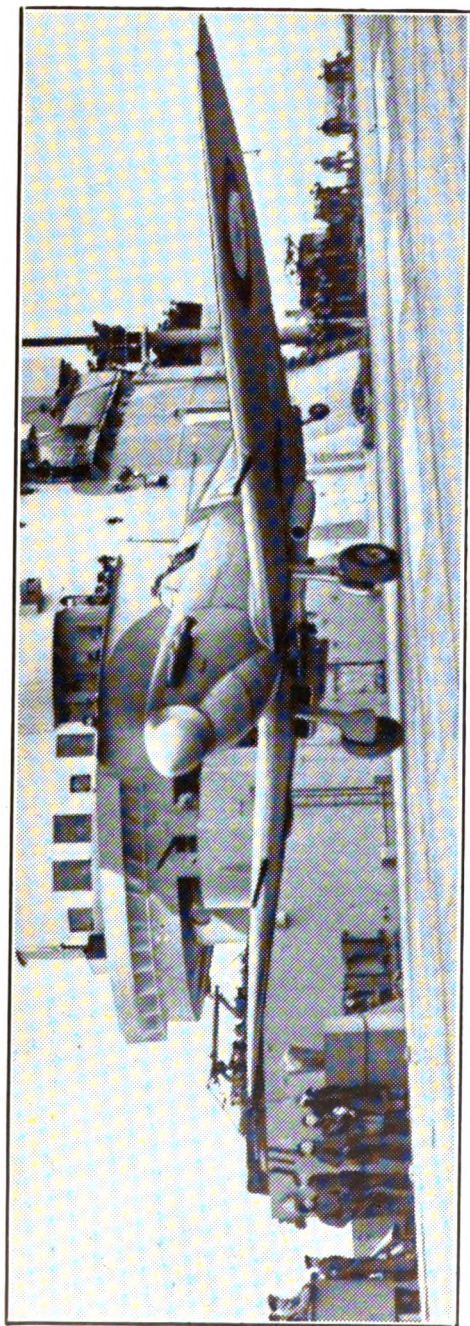
Thus sea power is still the basis on which all the United Nations' strategy rests and this must be so until the day arrives when air transport can take an effective part in communications. This sea power has to be fought for and is being successfully fought for to-day. Far from the air having dominated strategy at sea, the air weapon is assisting sea power and making it more, not less, effective. Sea power is essential to the existence and defence of the British Commonwealth. It is also an indispensable gift which can be used to exploit at will the military and air arms in any part of the world. In defending and extending sea power, the defence of the citadel from which all offensive power radiates is assured. Until the citadel is secure, no attack can be launched. Each arm of the Service has two functions, defensive and offensive.

It is no part of the purpose of this article to determine how the advantages of sea power should be exploited by the military and air arm, but one thing is quite certain and that is that victory cannot be attained without the occupation of enemy territory. Whether or no occupation after intensive bombing of enemy resources and the reduction of his morale will be easily attained or hard fought for, it is certain that air forces will be required in tactical co-operation with the Army. No doubt ample resources are available both for tactical co-operation with the Army and for independent strategical bombing, though such critics as Major Seversky would go all out for the latter. Let the enemy's resources be bombed *ad lib*, particularly those with which he is attacking our sea power, but it is essential to remember that the Army *cannot* act without the co-operation of the air weapon, whereas the theory that bombing alone will induce surrender has yet to be proved. Good strategy can only be based on well-tried and proven theories. There will be plenty of aircraft available for bombing, but it is essential that they are not provided at the expense of what are known to be tactical commitments. The air arm is the tactical weapon on which navies and armies largely depend. All work together for the defence and extension of sea power and each makes use of sea power to act offensively in its own element.

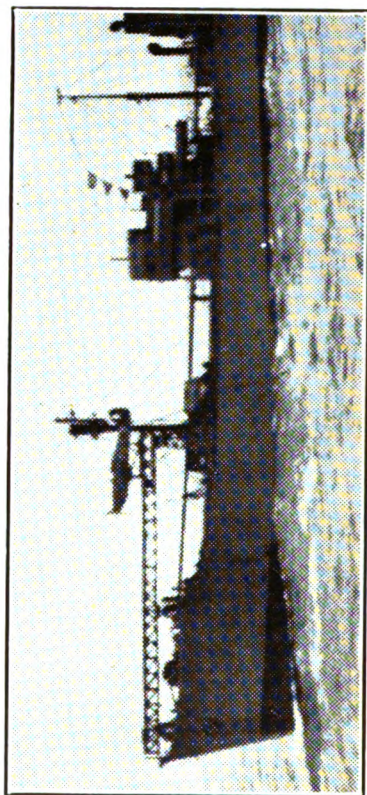
“ BARBEL.”



H.M.S. Illustrious



A Seafire fighter in a carrier.
(Official Photograph. Crown copyright reserved.)



A Hurricane fighter on a merchant ship's catapult.

REFERENCE SECTION

DIMENSIONS AND PARTICULARS OF BRITISH AND FOREIGN WARSHIPS.

Warships are arranged in classes, except in some instances where they are arranged alphabetically. The following abbreviations are used throughout the List :—

a.g.b. Armoured gunboat.	s.c. Seaplane carrier.
g.b. Gunboat.	H.N.S. Harvey nickel steel.
b. Battleship.	H.S. Harveyised or similar hard-faced steel.
b.c. Battle cruiser.	K.S. Krupp steel.
l.cr. Light cruiser.	t. Speed and H.P. at trials (in speed and H.P. columns).
c.d.s. Coast-defence ship.	b.p. Length of ship between perpendiculars.
M.Cr. Minelaying cruiser.	
cr. Cruiser.	
A.A. or H.A. Anti-aircraft guns.	
A.C. Aircraft carrier.	
A.T. Aircraft tender.	
L. Light guns under 15 cwt., including boats' guns.	
M. Machine guns.	
m.p.p. Multiple pom poms.	

Torpedo Tubes: (D.) = double; (T.) = triple; (Q.) = quadruple; (sub.) = sub-merged; a.w. = above water.

The following abbreviations are used to distinguish the various types of boilers :—

W.T. Water-tube boilers, where the type is not known.	I. Indret.
A. Ansaldo.	K. Kanpon.
B. Belleville.	My. Miyabara.
Bl. Blechynden.	Nic. Niclausse.
B. & W. Babcock and Wilcox.	Pen. Penhoet.
D'A. D'Allest.	T. Thornycroft.
G. Guyot.	T.S. Thornycroft-Schulz.
	W.F. White-Forster.
Y. Yarrow.	

The following abbreviations distinguish types of machinery :—

P.T. Parsons turbines.	tur. Turbines, where the type is not known.
C.T. Curtis turbines.	R. Steam reciprocating engines.
B.C.T. Brown-Curtis turbines.	I.C. Internal combustion engines.
(G.) Geared turbines.	W.G.T. Westinghouse geared turbines.
D. Diesel.	
Rat. Rateau.	

In later pages (marked P1, P2, etc., towards the end of the volume) plans of most of the ships appear.

Unless otherwise stated, the displacements are Standard displacements (i.e. deep less fuel and reserve feed water).

GREAT BRITAIN.—Battleships and Battle Cruisers.

Class	NAME	Standard Displacement. tons.	Length. (Extreme.) ft.	Beam (Extreme.) ft. ins.	Normal Draught. ft. ins.	Horse- Power. Type of Boilers.	Where Built.	Makers of Engines. Type of Machinery.	Date of Launch.	Date of Completion.	Cost. £	Armour.					Armament.		Speed. knots	Complement (War).	
												Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position. Heavy Guns.	Second- ary.	Guns.			Torpedo Tubes.
b.	1 Battleship	40,000	789	30 0			J. Brown Fairfield	J. Brown Fairfield	Bdg.			in.	in.	in.	in.	in.	9 16-in. guns.			knots	
b.	1 Battleship						Vickers (Walker) Cammell Laird	Vickers (Walker) Cammell Laird	Bdg.												
b.	Lion	40,000	789	30 0			Vickers (Walker) Cammell Laird	Vickers (Walker) Cammell Laird	Bdg.								9 16-in. guns.				
b.	Temeraire						Vickers (Walker) Cammell Laird	Vickers (Walker) Cammell Laird	Bdg.												
b.	King George V.	35,000	745	103 0	28 0		Vickers (Walker)	Vickers (Walker)	1939	1941							10 14-in., 16 5 25-in.; 4 m.p.p.; 4 aircraft; catapult.	Nil			1500
b.	Duke of York						J. Brown (G.)	J. Brown (G.)	1939	1941											
b.	Howe						Fairfield	Fairfield (G.)	1942												
b.	Anson						Swan	Wallsend	1942												
b.	Nelson	33,950	710	106 0	30 0	45,000	N'wcastle- on-Tyne	Wallsend B.C.T.(G.)	1925	1927	6,410,071	14	6½	..	..	16-9	9 16-in., 12 6-in., 6 4 7-in. A.A.; 6 2-pr. mult (sub.) p.p.; 5 m.; 11 L.; 2 24" 2-pr. Pom Poms in Nelson.	2	23	1360	
b.	Rodney	33,950	106 1				Birkenhead	Cammell Laird	1925	1927	6,148,319										1315
b.	Ramillies		620½	102 0			Dalmuir	B.C.T.(G.)	1916	1917	3,295,810						8 15-in., 12 6-in., 4 8-pr., 2 2-pr. m.p.p.; 8 4-in. A.A.; 5 m.; 11 L. Resolution has a cata- pult on X turret and carries 1 aircraft.	2	25½	1010	
b.	Resolution		620½	101 4			Jarrow	Palmer	1915	1916	2,449,680										1012
b.	Revenge	29,150	625½	101 5	29 0	40,000 Y.	Barrow	Vickers	1915	1916	2,406,368	13-4	4-1	6	6-4	11	6	2	23	1104	
b	Royal Sovereign		620½	101 6			Portsmouth	Parsons	1915	1916	2,570,504										

b	Malaya†	31,100 640‡ 104 0 31 8	75,000 B. & W.	Walker . P.T.	1915 1916 2,945,709	13-6	3-1	6	4-2	11	6	8 15-in., 12 6-in., 8 4-in. A.A.; 4 3-pr., 2 2-pr. m.p.p.; 5 m.; 11 L.; 1 catapult, 1 aircraft.	25|| 1186
b.	Valiant	31,100 639‡ 104 † 0 31 8	75,000 B. & W.	Fairfield . B.C.T.	1914 1916 2,537,037	13-6	3-1	6	4-2	11	6	8 15-in., 8 6-in., 4 3-pr., 4 4-in. A.A.; 2 2-pr. m.p.p.; 4 m.; 11 L.; 1 catapult, 1 aircraft.	25|| 1136
b.	Queen Elizabeth	31,100 644‡ 104 0 31 8	75,000 B. & W.	Portsmouth P.T.	1913 1915 2,473,108	13-4	3-1	6	4-2	11	6	8 15-in., 8 6-in., 4 2-pr., m.p.p.; 8 4-in. A.A.; 5 m.; 11 L.	25|| 1187
b.	Warspite	30,600 641‡ 104 † 0 28 2	75,000 Y.	Devonport P.T.	1913 1915 2,518,360	13-6	3-1	6	4-2	11	6	8 15-in., 8 6-in., 4 2-pr. m.p.p.; 8 4-in. A.A.; 5 m.; 11 L.; 1 catapult, 1 aircraft.	25|| 1130
b.c.	Renown*	32,000 794‡ 102 4 31 0	120,000 Govan	Fairfield . B.C.T.	1916 1916 3,117,204	9-8	2	6-3	4-3	11-7	6	6 15-in.; 20 4-5-in. A.A.; 5 m.; 11 L.; catapult and 4 aircraft.	2† 31-5|| 1188

* Renown modernised (1939), including re-engining.
† Built at the charge of the Federated Malay States.

|| Speed without bulges.

† Over rubbers.

GREAT BRITAIN.—Aircraft Carriers.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Extreme breadth under water over rubbers.	Draught.	Horse-Power. Type of Boiler.	Where Built.	Maker of Engines. Type of Machinery.	Date of Launch.	Date of Completion.	Cost.	Armour.			Armament.		Speed.	Complement (War).
												Belt.	Deck.	Gun Position.	Guns.	Torpedo Tubes.		
A.C.	Indefatigable	23,000	760	95 9	22 4		J. Brown	J. Brown	Bldg.		£	in.		in.	4-5-in. guns		30½	
A.C.	Implacable						Fairfield	Fairfield	Bldg.									
A.C.	Illustrious	23,000	740	95 9	22 4	111,000	Vickers (Barrow)	Vickers (Barrow)	1939	1940					16 4-5-in. guns; 20 smaller		20-2	420
A.C.	Victorious						Vickers (Walker)	Wallsend	1939	1941								
A.C.	Formidable						Harland & Wolff (Belfast)	Harland & Wolff	1939	1940								
A.C.	Indomitable	14,000	567	75 9	21 0	20,000	Vickers (Barrow)	Vickers	1940						4 3-pr., 4 M., 10 L., accommodates 20 aircraft	—	20-2	420
A.C.	Argus II						Dalmuir	Beardmore P.T.	1917	1918	Purchased under construction							

A.C.	Furious .	22,450	786	90	1	21	6	90,000	Walker Y. (Armstrong)	Walleend Eng'n'g Co. B.C.T.(G.)	1916 As a cruiser.	1925 As an aircraft carrier.	2,486,603(a)	3	7	12 4-in. A.A., 4 2-pr., m.p.p.; 46 smaller, 33 aircraft	81	728
S.C.	Pegasus* (ex-Ark Royal)	6900	366	50	10	17	6	8000	Blyth	Blyth S. B. Co. recip.	1914	1914	Purchased under con- struction	..	..	4 M., 10 L., 1 catapult	11	189
S.C.	Albatross ¶	4800	443	61	0	15	6	12,000 P.T. (a)	Cookatoo Island	Sydney	1928	1929	266,796	..	..	4 4-7-in. A.A., 4 2-pr. Pom Poms, 4 6-pr., 4 M.; 20 L.; 9 sea- planes	21	350

* Used for experimental work.

¶ Used as a training carrier.

(a) First cost of ship as a cruiser.

‡ Over rubbers; 120 ft. over paddles.
§ Transferred from Royal Australian Navy.

GREAT BRITAIN.—Cruisers.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam. (Extreme.)	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour.			Armament.		Speed.	Complement (War.)
		tons.	ft.	ft. ins.	ft. ins.						£	Belt.	Deck.	Gun Position.	Gun.	Torpedo Tubes.	knols.	
Norfolk Class	Norfolk .	9925	638	66 0	17 0	80,000 (G.)	Fairfield	Fairfield	1928	1980	2,141,961	..	..	..	8 8-in., 8 4-in. A.A., 4 3-pr., 2 2-pr. Pom Poms, 2 m., 10 L, 1 aircraft, 1 catapult.	8 21" (Q.)	32½	685
	Sussex .	9830	638	66 0	17 0	80,000	Hawthorn Leslie	Hawthorn Leslie	1928	1929	1,975,800†	..	..	..	8 8-in., 8 4-in. A.A., 4 3-pr., 4 m., 10 L., 1 aircraft, 1 catapult.	8 21" a.w. (Q.)	32½	685
London Class	Devonshire .	9850	630	66 0	17 0	111(G.)	Devonport	Vickers	1927	1929	2,007,275	..	..	..	8 8-in., 8 4-in. A.A., 4 3-pr., 4 m., 10 L., 1 aircraft, 1 catapult.	8 21" a.w. (Q.)	32½	685
	London .	9850	630	66 0	17 0	mouth	Portsmouth	Fairfield	1927	1929	1,966,559	..	..	..	8 8-in., 8 4-in. A.A., 4 3-pr., 4 m., 10 L., 1 aircraft, 1 catapult.	8 21" a.w. (Q.)	32½	685
Kent Class	Suffolk .	10,000	630	68 4	16 7	80,000 (G.)	Portsmouth	Parsons	1926	1928	2,180,240†	..	..	..	8 8-in., 8 4-in. A.A., 4 3-pr., 4 2-pr. Pom Poms, 4 m., 8 L., 3 aircraft	Nil	31½	700
	Berwick .	10,000	630	68 4	16 7	80,000 (G.)	Govan	Fairfield	1926	1928	2,029,526	..	..	..	Cumberland and Suffolk, 6 4-in. A.A., Kent, 1 aircraft.	Nil	31½	700
	Cumberland .	10,000	630	68 4	16 7	80,000 (G.)	Barrow	Vickers	1926	1928	2,960,821*	..	..	..	Cumberland and Suffolk, 6 4-in. A.A., Kent, 1 aircraft.	Nil	31½	700
	Kent .	10,000	630	68 4	16 7	80,000 (G.)	Chatham	Hawthorn	1926	1928	2,084,213†	..	..	..	Cumberland and Suffolk, 6 4-in. A.A., Kent, 1 aircraft.	Nil	31½	700
Improved Southampton Class	Belfast .	10,000	613½	63 4	17 3	80,000 G.T.	Harland & Wolff	Harland & Wolff	1988	1989	2,176,781†	..	..	..	12 6-in., 12 4-in. A.A., 20 smaller, 8 aircraft, 1 catapult.	6 21"	32½	..

GREAT BRITAIN.—Cruisers, &c.—continued.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam. (Extreme.)	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour.			Armament.		Speed.	Complement (War).
												Belt.	Deck.	Gun Position.	Guns.	Torpedo Tubes.		
E Class	Emerald	7550	570	54 7	16 8	80,000 B.C.	Armstrong	Wallsend.	1920	1926	1,617,120	11.	3-11	..	7 6-in., 3 4-in. A.A., 4 3-pr., 2 2-pr. Pom Poms, 2 M., 8 L., 1 aircraft.	16 21*	33	577
	Enterprise	7580		54 9		(G.) Y.	J. Brown	J. Brown.	1919	1926	1,690,658*		1	..				
D Class	Diomedes						Vickers	Vickers	1919	1922	1,146,904							
	Despatch						Fairfield	Fairfield	1919	1922	1,016,870							
	Durban						Scotts	Scotts	1919	1921	954,667							
	Delhi	4850	471 1/2	46 3	14	340,000	Armstrong	Wallsend.	1918	1919	785,145				6 6-in., 3 4-in. A.A., 2 M., 4 3-pr., 8 L., 2 2-pr. Pom Poms.	12 21*	29	460
	Danae		472 3/4	46 9		(G.) Y.	Armstrong	Wallsend.	1918	1918	701,600							
Hawkins Class	Dauntless						Palmer	Palmer	1918	1918	750,025							
	Dragon						Scotts	Scotts	1917	1918	690,083							
	Frobisher	9800	605	65 1	17 3	65,000	Devonport.	Wallsend	1920	1924	2,035,915†	3		Shields	5 4-in. H.A., 4 3-pr., 2 2-pr., 2 M., 8 L.	4 21"	30 1/2	715
Carlisle Class	Hawkins	9800		65 1		55,000 (G.) Y.	Chatham	Parsons	1917	1919	1,599,741						29 1/2	747
	Capetown						Cammell	Cammell	1919	1922	984,720							
	Colombo	4200	451 1/2	43 10	14 1	40,000 (G.) Y.	Laird	Laird	1918	1919	692,808							
Carlisle Class	Carlisle						Fairfield	Fairfield	1918	1918	669,216							
	Carlisle II						Fairfield	Fairfield	1918	1918	669,216							

Ceres Class	Cardiff . . .	4290	450	43	9	14	1	40,000	(G.) Y.	Fairfield J. Brown	1917	1917	542,507	3	..	5 6-in., 2 3-in. A.A., 4 3-pr., 2 2-pr. Pom Poms, 2 M., 8 L.	8	29	430
	Ceres . . .	4290	450	43	9	14	1	40,000	(G.) Y.	J. Brown	1917	1917	529,248	—	..	8 4-in. A.A., 1 m.p.p., 2 M.G., 8 Lewis.	21*		
	Curacoa II . .									Beardmore	1917	1918	794,201						
Caledon Class	Caledon . . .	4180	450	43	1	14	1	40,000	P.T. (G.) Y.	Cammell Laird	1916	1917	547,300	3	..	5 6-in., 2 3-in. A.A., 4 3-pr., 2 2-pr. Pom Poms, 2 M., 8 L.	8	29	420
	Caradoc . . .									Scotts	1916	1917	534,583	—	..		21*		
Leander Class	Achilles . . .	7030	554	55	8	16	0	72,000		Cammell Laird	1932	1933	..		..	8 6-in., 4 4-in. A.A., (Leander, 8 4-in. A.A.), 1 aircraft	8	32½	570
	Leander . . .	7270	554	55	2					Devonport Vickers	1931	1933	1,667,819		..		21*		
Dido Class	Charybdis . . .	5450	..	..	..	..	..	..	..	Cammell Laird		..	..	..	..
	Cleopatra . . .									Hawthorn		..	..	..	..
	Scylla . . .									Scotts		..	..	..	..
	Dido . . .									Scotts		1939	1940	..	..			33	
	Euryalus . . .	5450	..	..	..	..	..	62,000	T.G.	Cammell Laird	1939	1941	..	..	..	10 5.25-in., 1 cata- pult, 1 aircraft.	6		
Hawkins Class	Phœbe . . .									Chatham	1939	1940	..	..	..	
	Sirius . . .									Fairfield	1939	1940	..	..	..	
	Vindictive † .	9100	605	65	2	17	3	325,000	P.T.	Harland & Wolff	1918	1918	1,671,712	3	shields	2 4.7-in., 4 3-pr., 1 2-pr. Pom Poms, 2 M., 8 L.	..	20	720
M. Cr. Class	Adventure . .	6740	539	59	0	14	5	40,000	Tur. & Diesel	Devonport .	1924	1927	1,246,083	..	..	4 4.7-in. A.A., 4 3-pr., 4 2-pr. Pom Poms, 4 M., 8 L., 310 mines	..	28	700

* Total estimated cost of ship, including guns.

† Vindictive is demilitarised and employed as a cadets' training ship.

|| Anti-aircraft ship.

§ Being converted to anti-aircraft ship.

GREAT BRITAIN.—Miscellaneous Craft.

- GUNNERY DRILL SHIP (ex-Monitor).—**Marshal Soult (1915), 6,400 tons, 2 15-in. guns, 2 3-in. R.A. guns.
DESTROYER DEPOT SHIPS.—Greenwich (1916), 8,100 tons, 2 4-in. guns, 2 3-in. A.A.; Woolwich (1935), 8,750 tons, 15 knots, 4 4-in. A.A. Tyne (1941), 11,000 tons, 8 4.5-in. A.A., 2 2-pr. m.p.p., 7,500 S.H.P., 17 knots.
SUBMARINE DEPOT SHIPS.—Lucia, 5,800 tons; Titania, 5,250 tons, 14.5 knots; Alecko, 935 tons; Cyclops, 11,300 tons, 13 knots; Maidstone (1938) and Forth (1939), 8,900 tons, 17 knots, 8 4.5-in., 4 3-pr.; Adamant, 12,500 tons, 17 knots, 8 4.5-in.
REPAIR SHIP.—Resources (Vickers), 1915.—Melpomene, Minerva, 355 tons, 10 knots, 52 mines; (ex trawlers) Linnet, 489 tons, 10½ knots; Plover, 805 tons, 14½ knots.; Redstart (as MINELAYERS (ex-Monitors), 1915.—Melpomene, Minerva, 355 tons, 10 knots, 52 mines; (ex trawlers) Linnet, 489 tons, 10½ knots; Plover, 805 tons, 14½ knots.; Redstart (as Linnet), Abdiel, Manxman, Welshman (1941), 2,650 tons, 40 knots, 6 4-in.
SURVEYING VESSELS.—Endeavour, 1,280 tons, 13 knots, 1 3-pr.; Challenger, 1,140 tons, 1,200 H.P. (recip.), 12½ knots; Franklin, 830 tons, 17 knots, 1 3-pr.; Scott (1939), 815 tons, 17 knots, 1 12-pr. A.A.
NON-MAGNETIC SURVEY VESSEL.—Research, building by Philip at Dartmouth. Sailing vessel. Aux. motor, 160 B.H.P., 770 tons, 6½ knots.
NETLAYER AND TARGET TOWING VESSELS.—Guardian (Chatham, 1931–3), 2,860 tons, 6,500 H.P., 18 knots, 2 4-in. A.A. Protector (1934 programme), 2,900 tons, 20 knots, 1 4-in.
MINING SCHOOL (VERNON) TENDER.—Nightingale (Portsmouth, 1931), Vernon (Portsmouth, 1932), displacement 275 tons, horse-power 400, speed 10 knots, coal capacity 15 tons.
BOOM DEFENCE VESSELS.—Bownet, Burgoet Dragonet, Falconet, Magnet, Martinet, Planet, Plantagenet, Signet, Sonnet, 850 I.H.P., 1 3-in. Barbarian, Barbette, Barbican, Barbrook, Barcastle, Barcombe, Barcroft, Barnhurst, Barfair, Barfield, Barlane, Barlight, Barlow, Barnmouth, Barrage, Barranca, Barricade, Barrier, 730 tons, 850 I.H.P., 11½ knots, 1 3-in. Dunnet 350 tons, 350 I.H.P., 10 knots, 1 3-in. Jennet, Punnet, Kennet, Quannet, Moorgate, 345 tons, 1 3-in. Aldgate, Bishopsgate, Dowgate, Ludgate, Watergate, 290 tons, 1 3-in. (these vessels are not self-propelled). Coronet, Barnet, 429 tons, 10½ knots, 1 3-in.
TENDERS.—(For Submarine depôt, Portland), Elfin (1933), 222 tons, 250 H.P., 9½ knots. (For Torpedo School) Redwing (1933), 225 tons, 250 H.P., 9½ knots.
GUNNERY TRAINING SHIP.—Battleship Iron Duke was de-militarised under the London Treaty and converted to a Gunnery Training Ship (1931–32).
FLEET TARGET SHIP.—Centurion (ex-battleship), 25,500 tons.
TRAWLERS.—Basset (1935), 460 tons, 1 4-in. gun; Blackwater, Foyle and Boyne (War built), Lileac, Laurel, Holly, Hawthorn, Cedar, Cypress, Sycamore, Syringa, Magnolia, Willow, 570–800 tons, 1 4-in. gun; Turquoise, Topaze, Sapphire, Cornelian, Pearl, Ruby, purchased in 1935, 580–640 tons, 1 4-in. gun. Colne, Doon, Dee, Garry, Kennet, Liffey, 10½ knots, 1 12-pr. Redwood, Oak, Maple, Larch, Hornbeam, Berberis, Acacia, Bay, Birch, Blackthorn, Deodar, Elm, Fir, Olive, Mangrove, Pine, Rowan, Walnut, Whitehorn, Wistaria, 500–600 tons. Arctic Ranger, Bengali, Brontes, Cambridgeshire, Cape Argona, Cape Cormorin, Daneman, Davy, Derby County, Drangey, Huddersfield Town, Istria, Kelt, Kingston, Andalusia, Kingston Chrysolite, Kingston Olive, Kinella, Lady Beryl, Lady Elias, Leeds United, Leyland, Loch Melfort, Loch Tulla, Lord Hotham, Lord Lloyd, Lord Piender, Lord Wakefield, Man o' War, Pict, Regal, Saon, Sindonia, Spurs, Stafnes, Thornwick Bay, Turcoman, Vascama, Victorian, Wellard, York City. 4 in No. Trawlers building in Portugal.
CABLE VESSELS.—Lasso, 910 tons, 1,100 I.H.P., 13 knots; Kilnmu, 700 I.H.P., 10 knots.
MOTOR TORPEDO BOATS.—Nos. 6–12 and 14–18, 60 ft. long. 18 tons, 1,500 B.H.P., 36 knots, 8 small guns, 2 torpedoes. M.T.B. No. 22 70 ft., 32 tons, 3,650 B.H.P., 40 knots, 2 torpedoes. No. 100 (ex-m.m.s. 51). M.T.B. 101, 67 ft., 22 tons, 2 torpedoes. M.T.B. 102, 68 ft., 28 tons, 3,000 B.H.P., 44–48 knots, 2 21-in. torpedoes. Many others.
MOTOR GUN BOATS.—Number unknown.
MOTOR MINESWEEPERS.—Nos. 1 and 2, 52 tons, 1,500 H.P., 15 knots.
MOTORS ANTI-SUBMARINE BOATS.—Number unknown.
MONITORS.—Erebus 7,200 tons, 12 knots, 2 15-in., 8 4-in., 2 3-in. A.A. 12 smaller guns.
AUXILIARIES.—Tugs, Drifters, Mooring lighters, etc.
FLEET AIR ARM SUPPLY AND DEPOT SHIP.—Unicorn (building), 14,500 tons, 40,000 S.H.P., 24 knots.
STORE SHIPS.—Robert Dundas, Robert Middleton, Bechoth, Reliant.
OIL TANKERS.—Abbeydale, Aldersdale, Ardsale, Bishop Dale, Boardale, Cedarvale (1937–39), 11,500 tons D.W., 11½ knots. Oleades, Oligarch Olwen and Olynthus, 9,000 tons D.W., 10½ knots. War Afridi, War Bhairava, War Brahmin, War Diwan, War Hindoo, War Krishna, War Nawab, War Nizam, War Pathan, War Pindari, War Sudra, 7,000 tons D.W., 11 knots. Appleleaf, Brambleleaf, Cherryleaf, Plumleaf (1917), 5,000 tons D.W., 15 knots. Belcol, Celcor, Mixol, Montanol, Prestol, Rapidol, Serbol, Thermol (1917), 2,000 tons D.W., 13½ knots; Boxol, Distol, Elderol, Elmol, Hukorol, Kimmerol, Lorhol, Limol, Philol, Scotol, Viscol (1917), 1,000 tons D.W., 9 knots.

For destroyers, submarines, sloops, corvettes, minesweepers and river gunboats, see Flotilla tables.

Defence Forces of the Dominions.

ROYAL AUSTRALIAN NAVY.

Under Control of the Australian Naval Board.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam. (Extreme.)	Draft.	Type and Boilers.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour.		Guns.	Torpedo Tubes.	Speed.	Complement (War).
												Belt.	Deck.				
Kent Class	Australia .	9870 tons.	630 ft.	68 ft. 4 in.	16 ft. 3 in.	80,000 B.C.	Brown	Brown	1927	1928	£ ..	in.	..	8 8-in., 8 4-in. A.A., 4 3-pr., 4 2-pr. m.p.p., 4 m., 12 L., 1 aircraft, 1 catapult.	8 21"	31½ knots	685
London Class	Shropshire	9830	633	66 0	17 0	(G.) Y.	Dalmuir	Beardmore	1928	1929	1,941,950†	..	..	..	a.w. (Q.)	32½	685
Modified Leader Class	Hobart (late Apollo)	7000	562	56	8 15	72,000 P.T. (G.)	Devonport	Beardmore	1934	1936	1,459,117*	..	..	8 6-in., 8 4-in. A.A., 18 smaller, 1 catapult, 2 aircraft	8 21"	32½	590
Adelaide Type Cruiser	Adelaide .	5100	462½	50 1	15	102,500 P.T.	Sydney	Sydney	1918	1922	..	3	—	8 6-in., 3 4-in. A.A., 4 3-pr., 8 L., 2 m.	2 (sub.) 21"	25·5	450
Flotilla Leader	Stuart .	1530	332½	31 9	12	34,000 Y.	Hebburn	Hawthorn Leslie	1918	1918	—	—	—	5 4·7-in., 1 3-in. A.A., 7 m. & L.	6	36½	182
Tribal Class Destroyers	Arunta Warramunga and others	1870	..	36 6	..	..	..	..	bldg.	..	500,000 (approx.)	..	..	8 4·7-in., 7 smaller	4 21"	36½	200

DESTROYER.—"V" Class :—Vendetta. Completed, 1917–18; Displacement, 1,090 tons; 27,000 H.P.; speed, 34 knots; armament, four 4-in.; 6 smaller guns, 6 torpedo tubes. Napier, Nizam, Norman, Norseman, Quiberon, 6 4·7-in.

SLOOPERS.—Warrego (1940), 1060 tons, 2000 H.P. (T.G.), 16½ knots, 3 4-in., 4 3-pr., and Swan (1936). Bendigo, Lithgow, Maryborough, Rockhampton, Tamworth, Townsville, Ballarat, Bathurst, Lismore.

SURVEYING VESSEL.—Moresby (late Silvio) (1918), 1650 tons, length 267½ ft., 2,500 H.P., 15 knots, one 3-pr.

DEPOT AND FLEET REPAIR SHIP.—Penguin (late Platypus) (J. Brown, Clydebank, 1917). Displacement 3455 tons, 14 knots, 1 4-in.

BOOM DEFENCE VESSELS.—Kookaburra, 52½ tons, 9½ knots, 1 12-pr. A.A. Koala, Kangaroo (1940), 770 tons, 1 12-pr.

MINESWEEPERS.—50 in number, building.

* Total cost, including guns and aircraft.

† Estimated cost, excluding armament and ordnance stores.

NEW ZEALAND DIVISION OF ROYAL NAVY.

Under the control of New Zealand Naval Board.

The CRUISERS Achilles and Leander, the SLOOPs Leith and Wellington and the SURVEYING VESSEL Endeavour are allocated to the station.
TRAINING AND DEPOT SHIP.—Philonel (2570 tons) ; 1 6-in., 1 4-in., 2 12-pdr. TRAWLER.—Wakara.
MINESWEEPING TRAWLERS.—Moa, Kiwi, Tui, Inchkeith, Killegay, Sanda, Scarba.

ROYAL CANADIAN NAVY.

Under control of the Canadian Department of National Defence.

DESTROYERS.—St. Laurent (ex-Cygnét, Vickers, 1932), Restigouche (ex-Comet, Portsmouth 1931), 1375 tons, 36 knots, 36,000 S.H.P., 4 4-7-in., 7 smaller, 2 quadruple 21-in. torpedo tubes. Saguenay and Skeena (Thornycroft, 1931), 1337 tons, 32,000 S.H.P., 35 knots, 4 4-7-in., 2 2-pdr., 2 quadruple 21-in. torpedo tubes ; Assiniboine (ex-Kempfenfelt, J. S. White, 1937), 1390 tons, 36,000 S.H.P., 35-5 knots, 4 4-7-in., 2 2-pdr., 8 21-in. torpedo tubes. Ex-U.S.N. Town Class : St. Croix and St. Francis (1919), 1190 tons, 35 knots, 4 4-in., 1 3-in., 12 21-in. torpedo tubes ; Hamilton, Niagara, Columbia, Annapolis and St. Clair (1918-1920), 1060 tons, 35 knots, 4 4-in., 1 3-in., 12 21-in. torpedo tubes. 2 Tribal Class, building in Canada, 1870 tons, 36-5 knots, 8 4-7-in., 7 smaller, 4 21-in. torpedo tubes.

MOTOR TORPEDO BOATS.—15 in number, 70-ft. long, 4,350 B.H.P.

CORVETTES.—Agassiz, Alberni, Algoma, Amherst, Avida, Baddock, Banff, Barrie, Battleford, Brandon, Buctache, Calgary, Camrose, Carlton, Chambly, Charlottetown, Chicoutimi, Chilliwack, Cobalt, Collingwood, Dauphin, Dawson, Drumblair, Dunvegan, Edmundston, Fort York, Fredericton, Galt, Kamloops, Kengami, Lethbridge, Louisburg, Lunenburg, La Mabaie, Matapedia, Moncton, Moose Jaw, Morden, Nanaima, Nananee, Oakville, Orillia, Pas, Picton, Prescott, Quesnel, Regina, Rimouski, Rosthern, Sackville, Saskatoon, Shawinigan, Shediac, Sherbrooke, Sorel, Sudbury, Summerside, Trial, Vancouver, Wetsaskwin, Weyburn (1940-41), 1 4-in. gun.

MINESWEEPERS.—Bellechasse, Brookville, Chisdabulto, Chignecto, Clayoquot, Cowichan, Esauimalt, Esqueranza, Georgian, Ingonish, Mahone, Malpeque, Minas, Miramichi, Nipigon, Outarde, Qualicum, Quatsind, Quinte, St. Ann, Tadoussac, Thunder, Transcona, Trois, Rivieres, Ungava, Wasaga, Westport.

PATROL VESSELS.—24 building.

MINESWEEPING TRAWLERS.—Armentières (1918), 360 tons, 10 knots ; Comox, Nootka, Gaspe and Fundy (1938), 668 tons, 12½ knots, 1 4-in. ARMED MERCHANT CRUISERS.—3 in number. MOTOR PATROL BOATS.

SOUTH AFRICA.

[A number of M.T.Bs., MINESWEEPERS and other small craft.]

ROYAL INDIAN NAVY.

MINESWEEPING SLOOPs.—Hindustan (1930), 1,190 tons ; 2,000 H.P. ; 16½ knots ; 2 4-in., 4 3-pdr., 10 smaller guns. Clive, 1920, 2,021 tons ; 1,700 H.P. ; 14½ knots ; 2 4-in., 2 2-pdr., 4 3-pdr. guns. Lawrence, 1919, 1,259 tons ; 1,900 H.P. ; 15 knots ; 2 4-in., 4 3-pdr., 2 2-pdr. guns.

SLOOPs.—Cornwallis (1917), 1,345 tons ; 17 knots ; 2,500 H.P. ; 3 4-in., 2 2-pdr., 4 3-pdr. guns. Narbada, Godavari, Sumna, Sutlej.

SURVEYING SHIP.—Investigator (1907), 1,172 tons ; 1,137 H.P. ; 13 knots ; no guns.

TRAWLERS.—Madras, Travancore, Baroda, Amritsar, Lahore. MINESWEEPERS.—Orissa, Rajputana.

Class.	NAME.	Standard Displacement.	Length (Extreme).	Beam.	Draft.	Horse-Power. Type of Machinery.	Where Built.	Date of Launch.	Cost.	Armour.					Armament.		Speed.	Fuel. Oil.	Complement.
										Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position. Heavy Guns.	Second ary.	Guns.				Gun.	Torpedo Tubes.
c.	La Argentina	6500 tons.	535 ft.	56 ft.	16 ft.	54,000 P.T. (G.) Y.	Vickers, Barrow	1937 1938	1,750,000 approx.	in. 3	in. 3	in. .	in. .	in. .	9 6-in., 4 4-in. A.A., 2 3-in., 25 A.A. m.g., 1 catapult, 2 aircraft.	6	30 knots.	556 tons + 60 oil a.	
c.	Almirante Brown	6195 tons.	545 ft.	58 ft.	16 ft.	100,000 P.T. (G.) Y.	{ Genoa . Leghorn }	1929 1931	1,250,000	8	1	..	2	2	6 7-5-in., 12 4-in. A.A., 6 Pom Poms, 1 catapult, 2 seaplanes.	2	32 knots.	1800 tons	600
c.	Veinticinco de Mayo																		
c.d.s.	General Belgrano†	6100 tons.	528 ft.	59 ft.	24 ft.	18,000 Y. R.	Leghorn	1887 1899	686,700	6-3 ft.	1½ ft.	6 ft.	6 ft.	6 ft.	2 10-in., 8 6-in., 4 6-pr.	—	20 knots.	1000 tons	515
c.d.s.	Pueyrredon †	6100 tons.	528 ft.	59 ft.	24 ft.	18,000 Y. R.	Sestri Ponente	1898 1901	783,000	6-3 ft.	1½ ft.	6 ft.	5 ft.	6 ft.	2 10-in., 8 6-in., 4 6-pr., 1 1-pr. A.A.	—	20 knots.	1000 tons	430
b.	{ Moreno . Rivadavia }	27,940 tons.	585 ft.	97 ft.	28 ft.	45,000* C.T. (G.) B. & W.	{ Camden, N.J. (N.Y.S.B.Co.) Quincy, Mass. }	1911 1914	2,200,000	12-10 ft.	9-6 ft.	9 ft.	12-9 ft.	6 ft.	12 12-in., 12 6-in., 4 3-in. A.A., 4 1-85-in., 6 m.	2 (sub.) 21 ft.	32-5 knots.	4200 tons	1175

* Moreno and Rivadavia were converted to oil burning and fitted with geared turbines in 1928. † Converted to oil burning and armament altered in 1929. Used as training ships.

COAST DEFENCE SHIPS.—Libertad and Independencia, 2510 tons, 13 knots, completed at Birkenhead in 1891-93, and converted to oil fuel in 1927, carry two 9-4-in., four 4-7-in., four 3-pr. guns, 2 1-5-in. A.A.
 RIVER GUNBOATS.—Paraná and Rosario (Elawick, 1908), 1055 tons, two 6-in. howitzers, six 3-in., 2 L., 15 knots.
 TRAINING-SHIP (cruiser).—Presidente Sarmiento (Birkenhead, 1896; refitted 1926), 2320 tons, 15 knots; four 4-7-in., four 6-pr. two 3-pr., 3 torpedo tubes.
 SURVEYING VESSELS.—Comodoro Rivadavia, ex-San Juan, Bahia Blanca ex-San Luis (Hawthorn Leslie, Newcastle, 1928), 790 tons, 1-3-in. 12 knots, Alferez Mackinlay (1914), 783 tons, 10 knots. ESCORT VESSELS.—Murature, King (building), 1000 tons, 4000 B.H.P., 16 knots.
 Tugs.—Mataco, Toba (completed 1928, at Messrs. Hawthorn Leslie's, Newcastle), Azapardo (1919), Oma, Querandi (Thornycroft, 1914), and 9 others.
 MINESWEEPERS.—Comodoro Py, Bouchard, Drummond, Granville, Parker, Robinson, Seaver, Fournier, and Spiro (1937-38); 550 tons; 2000 H.P.; 16 knots; two 3-9-in., two 2-9-in. guns; Bathurst, Golondrina, Pinedo, Segui, Thorne (ex-German, 1917); 17 knots; three 3-in. guns.
 OILERS.—Punta Alta (1937), 800 tons D.W.; Ministro Ezcurra (1914), 10 ft. knots; Ministro Frers (1927), and Floritino Ameghino.
 TRANSPORTS.—Chaca, Pampa (ex-Rio Clara) (1923), 2,100 tons, 11 knots; Patagonia (1925), 9 ft. knots; 1 de Mayo.
 A number of Cruisers, Destroyers and Submarines are projected.
 For Destroyers and Submarines, see Flotilla Tables.

BRAZIL.

Class.	NAME.	Standard Displacement.	Length. (Extreme).	Beam.	Draught.	Horse-Power. Type of Machinery.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Oil.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkheads.	Heavy Guns.	Gun Position. Second Mt.	Guns.	Torpedo Tubes.			
b.	Minas Geraes *	19,200	541	88	25	25,000 R. T.	Elswick Barrow	1909 1910	1909 1910	£ 1,821,400	in.	in.	in.	in.	in.	in.	{ 12 12-in., 14 4 7 in., 4 3-in. A.A.; 2 3-pr., 4 1.5-in. M., 8 A.A. M.G. }	—	21	—	850
b.	São Paulo *										in.	in.	in.	in.	in.	in.					
l.cr.	†Bahia . .	3150	401½	89	18½	22,000 B.C.T. (G.) T.	Elswick	1909 1910	1909 1910	..	in.	in.	in.	in.	in.	in.	10 4 7-in., 4 3-pr.	4 21" (D)	27	600	450
l.cr.	†Rio Grande do Sul					

* Reconstructed and converted to oil fuel, 1934-39, 1937-40 respectively.

† Reconstructed, including conversion to oil fuel, at Rio de Janeiro, 1924.

MINELAYERS.—Cananeia, Cabedelo, Camocim, Camaqua, Caravela, Carioca, 188½ feet, 552 tons, 2500 H.P., 14 knots, 1 4-in. gun, 50 mines. Itapimerim, 118 feet., 150 tons, 2 1½-in., 30 mines. Itacurusa (1901), 210 tons, 10 knots, 1 1½-in. MINESWEEPERS.—Iguape, Itajai (1908), 150 tons, 10 knots, 1-85-in. RIVER MONITORS.—Pernambuco, 470 tons, 11 knots, built at Rio de Janeiro (1910), two 4-7-in., 2 3-pr. guns. Parnahyba, 600 tons 180½ feet in length, 12 knots, one 6-in. gun. Paraguassu, 430 tons, 146 feet, 1 4½-in. gun, 13 knots. Oiapoque (1907), 195 tons, 14 knots, two 3-pr., 2 M. SUBMARINE TENDER.—Ceará (Spezia, 1916), 4000 tons, 4100 H.P., 14 knots, four 4-in., four 3-pr. SUBMARINE TENDER.—Belmonte (ex-German SS, Valesia), 5227 tons gross, four 4-7-in., six 6-pr., 2700 H.P. 12 knots. REPAIR SHIP.—Almirante Saldanha, Vickers' (1934). A four-masted schooner, 3325 tons, 305 feet over all, four 4-in. and one 3-in. A.A. guns, one 21-in. torpedo tube, 1400 B.H.P. aux., 12 knots. SURVEY VESSELS.—Rio Branco, 895 tons, 15 knots, two 6-pr. Vital de Oliveira, Jose Bonifacio, 1,300 tons, 9 knots, two 4-in., two 6-pr., Jacequay, 800 tons, 16 knots. SUBMARINE CHASERS.—C.S.1, C.S.2 (1942), 1 3-in. TANKERS.—Novais de Abreu (1918), 10 knots; Marajo (ex-Malistan, 1924), 10 knots; Potengi (1938), 10 knots. OCEAN GOING TUGS.—Laurindo Pitta (1910), 514 tons, 11 knots; Annibal Mendonca (1919), 12 knots, 2 3-pr.; Heitor Perdigao, Muniz Freire, Lomba (1924), 200 tons, 11 knots, 2 3-pr. LIGHTSHIP TENDERS.—Lahmeyer, Tenete Mario Alves, 280 tons.

For Destroyers and Submarines, see Flotilla Tables.

CHILE.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Cost.	Armour.					Armament.		Speed.	Fuel. Coal. Oil.	Complement.	
										Belt.	Deck.	Side above Belt.	Bulkhead.	Heavy Guns.	Gun Position. Second-ary.	Guns.				Torpedo Tubes.
b.	Almirante Latorre * (ex-H.M.S. Canada)	28,950 tons	361 ft.	92 ft. 6 in.	6 ft. 29 in.	0 37,000 P.T. Y.	Elswick	1913	1915	£ 9-4	in. 4-2½	in. 4½	in. ..	in. 10	in. 6	10 14-in., 4 4-in., A.A., 4 1.8-in., 1 cata-pult.	4 (sub.) 21"	23 knots.	4300 tons.	1000
cr.	Chacabuco . . .	3417	360	46	6 17	0 15,500	Elswick	1898	1891	..	..	..	..	..	..	4 6-in.	2 18"	—	—	—
cr.	Blanco Encalada †	3435	370	46	6 19	0 14,500	Elswick	1893	1894	..	4-1½	..	..	..	..	2 8-in., 8 6-in., 4 3-in.	2 18" 22.7	850	385	—
cr.	Cruisers (two) . .	10,000	P.P.				Projected									8-in.				

* Fitted with bulges, converted to oil burning, and modernised in England (completed 1981). † Training ship.

OILERS (Armstrongs, 1930)—Maipo, Rancagua, 3,080 tons displacement, two 4.7-in. guns. COASTGUARD VESSELS—Orompello, Ellicura, 580 tons; built 1919; 1400 I.H.P.; 14 knots; 2 3-in. guns. Sibbald, Yelcho, Mieslvi, Condor, and Yanez. Two in number, 1,000 tons (building). SUBMARINE DEPOT SHIP—Araucano (Vickers-Armstrongs, Barrow), completed 1930; displacement 5,890 tons; armament two 4.7-in., two 3-in. A.A.; speed 18 knots; H.P. 2,500; 1 seaplane. Five tugs, 790 tons, 11 knots, 1 3-in. gun. Two tugs, 320 tons, 12 knots. Two towing launches. Two Cruisers projected, probably 10,000 tons, with 8-in. guns. Two Tugs projected.

SURVEYING VESSEL.—Vidal Gormaz (ex-Jason), 700 tons, 13 knots.

TRANSPORT.—Angamos, 3,800 tons (building). Abtao (1912), 10 knots.

For Destroyers and Submarines, see Flotilla Tables.

DENMARK.*

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.					Armament.		Speed.	Fuel.		Complement.
											Belt.	Deck.	Slide above Belt.	Bulkhead.	Gun Position.	Heavy Guns.	Second-ary.		Guns.	Torpedo Tubes.		Coal.	Oil.
		tons.	ft. ins.	ft. ins.	ft. ins.					£	in.	in.	in.	in.	in.	in.	in.	knots.	tons.		
cr.	Niels Iuel†	3800	295	453	615	9	Copenhagen	1918	1923	..	8-4 K.S.	2	..	..	2	105-9-in., 2 3/4-in., 8 M.G., 10 7/8-in. A.A.	2 (sub.) 18"	17-0	240 250	365	
c.d.a.	Peder Skram	3500	286	751	616	3	Copenhagen	1908	1909	..	8-4 K.S.	2	..	..	7	29-4-in., 4 5/8-in., 8 3/4-in., 2 1/45-in., 4 7/8-in. M., 2 M.	4 (sub.) 18"	16-0	250 —	275	

* Under the control of Germany.

† Modernised 1930.

MINELAYERS.—Løssen 640 tons, 12 knots, 2 3-in., 2 A.A. guns, 175 mines; Sixtus and Kvintus, 186 tons, 8 knots, 2 1-pr. guns, 60 mines. Steamboat A, 96 tons, 7 knots, 2 M.G. Lindormen (1941), 500 tons, 14 knots, 2 3-in.

MINESWEEPERS.—Springeren, Støren, Soridderen, Solhunden, Havhesten and Narhvalen, 110 tons, 24-3 knots, 2 2 1/2-in. guns, 1 torpedo tube; Soloven, Sobjörnen, Soulvén, 270 tons, 18 knots, 2 3-in. Ex-torpedo boats.

CORVETTES.—Hvalrosen, 169 tons, 26-3 knots, 1 3-in. gun, 4 18-in. torpedo tubes; Makrelen, Nordkaperen, Havkatten, and Sælen, 110 tons, 24-8 knots, 2 2 1/2-in. guns, 4 18-in. torpedo tubes. Ex-torpedo boats.

SURVEYING VESSELS.—Hejmdal, 705 tons, 12 1/2 knots, 2 3-in. guns, 4 7 1/2-in. A.A.; Ternen, 80 tons, 1 1 1/2-in. Freja (1940), 315 tons, 10 knots.

FISHERY PROTECTION VESSELS.—Ingolf, 1180 tons, 16 1/2 knots, 2 4 1/2 in., 2 2 1/2-in. guns, 1 aircraft; Hvidbjörnen, 1050 tons, 14 knots, 2 3 1/2-in. guns; Islands Falk, 730 tons, 13 knots, 2 3-in., 2 1 1/2-in. guns; Beskytteren, 415 tons, 11 knots, 1 2 1/2-in. gun; Maagen, 110 tons, 8 knots, 1 1 1/2-in. gun; Aegir, 500 tons, 14 knots, 2 6-pr.

DEPOT SHIPS.—Hekla, Grønsund, Fven. TRANSPORT SHIPS.—Sleipner, 110 tons, 8-7 knots; Middegrunden, Fremad, Kongedybet. 4 Icebreakers. 3 Cable Ships.

REPAIR SHIP.—Henrik Gerner (1928), 463 tons, 13 knots, 2 3-in. ROYAL YACHT.—Dannebrog (1932), 1,130 tons, 14 knots.

For Torpedo Boats and Submarines, see Flotilla Tables.

FRANCE.—Battleships.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draft.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.					Armament.		Speed.	Fuel. Oil.	Complement.					
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position. Heavy Guns.	Second-ary.	Guns.				Torpedo Tubes.				
b.	Richelieu †	35,000 tons.	794 W.L.	626	7	165,000 (G.) I.	Brest	1939	1940	£	in.	in.	in.	in.	in.	in.	8 15-in., 15 6-in., 12 1.5-in. A.A., 2 catapults, 4 aircraft.	..	about 31	..	1500				
b.	Jean Bart †						St. Nazaire	1939	1940	..	8	8 13-in., 16 5.1-in., 4 1.5-in., 8 1.46-in., 32 5 in., 1 catapult, 4 aircraft.	..	29½	..	1400
b.	Clemenceau †						Brest	Bldg.	10-8	4-9	13-8
b.c.	Strasbourg *	26,500 tons.	702	0 101	825	100,000 P.T. (G.) I.	St. Nazaire	1936	1938	..	10-8	4-9	..	..	..	..	8 13-in., 16 5.1-in., 4 1.5-in., 8 1.46-in., 32 5 in., 1 catapult, 4 aircraft.	..	29½	..	1400
b.c.	Dunkerque *						Brest	1935	1937	5,200,000
b.	Provence † *	22,189	544	688	632	0 43,000 P.T. I.	Lorient	1913	1916	2,580,000	11-7 K.S.	2½-1½	7 K.S.	7 K.S.	10½ K.S.	7 K.S.	10 13.4-in., 14 5.4-in., 8 3-in. A.A., 5 3-pr., 2 1-pr., 2 L., 4 scaplanes, 1 catapult.	4 (sub.) 18"	21.0	2600	1190				

* Scuttled at Toulon, 27 November 1942.

† Reconstructed and modernised between 1923 and 1935.

‡ Reported to be extensively damaged.

FRANCE.—Battleships—*continued*.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Fuel. (Coal. Oil.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Heavy Guns.	Gun Position. Second- ary.					
b.	Courbet*†	22,189	551	0 92	6 32	0 28	000 Brest	1911	1913	2,508,388	11-7 K.S.	23-13	7 K.S.	7 K.S.	10½ K.S.	7 K.S.	12 12-in., 22 5-4-in., 7 3-in. A.A., 2 1-pr., 2 L.	4 (sub.) 18"	20-0	300 2700	1068
b.	Paris*†	22,189	551	0 92	6 32	6 28	000 La Seyne	1912	1914	2,603,920	11-7 K.S.	23-13	7 K.S.	7 K.S.	10½ K.S.	7 K.S.	8 13-4-in., 14 5-4-in., 8 3-9-in. A.A., 5 47mm. A.A., 2 1-pr., 2 L., 2 aircraft, 1 catapult	4 (sub.) 18"	21½	300 2000	1167
b.	Lorraine*	22,189	544	6 88	6 32	0 42	000 St. Nazaire	1913	1916	2,642,439	11-7 K.S.	23-13	7 K.S.	7 K.S.	10½ K.S.	7 K.S.					

* Reconstructed and modernised between 1923 and 1935.

† Operated by the Allies.

Aircraft Carriers.

Class.	NAME.	Standard Displacement. tons.	Length. (Extreme). ft. ins.	Beam. ft. ins.	Draught. ft. ins.	Horse-power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed. knots.	Fuel. Oil.	Complement
										£	Belt. Deck.	Gun Position.	Guns.	Torpedo Tubes.			
A.C.	Bearn *	22,140	599 0	115 6	30 6	37,200	La Seyne	1920	1928	..	in. 9½ 1-3	in. ..	8 6-1-in., 6 3-in. A.A., 8 1-pr. A.A., 12 M. A.A., 41 planes	4 217*	21.5	tons, 2070	875
Aircraft Transport A.C.	Commandant Teste †	10,000	548 0	88 7	22 9	21,000	Bordeaux	1929	1932	..	2 1½	..	12 3-9-in. A.A., 8 3-pr. A.A., 12 M., 19 planes, 4 catapults, 5 cranes.	—	20.5		648
A.C.	Joffre †	18,000	775 0	112 0			St. Nazaire	Bldg.					8 5-1-in. guns, 40 planes.		32		
A.C.	Painleve †																

* Originally designed and laid down as a battleship; reconditioned 1935.

† Reported to be extensively damaged.

† Schneider-Zoelly turbines (G.). Yarrow-Loire S.T. boilers.

|| Scuttled at Toulon, 27 November 1942.

FRANCE.—Cruisers.

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Class.	NAME.	Standard Displacement. tons.	Length. (Extreme.) ft. ins.	Beam. ft. ins.	Draught. ft. ins.	Horse-Power. Type of Machinery	Where Built.	Date of Launch.	Cost. £	Armour.		Armament.		Speed. knots.	Fuel. Oil. tons.	Complement.
										Belt.	Gun Position.	Guns.	Torpedo Tubes.			
Training cruiser	Jeanne d'Arc .	6496	557 9	57 5	18 8	32,500	St. Nazaire	1930	..	In. ..	In. ..	8 6-1-in., 4 3-in. A.A., 2 1-5-in., 2 M., 2 seaplanes, 2 catapults	2 21"	26	1400	506
	De Grasse* .	8000	..	..	..	..	Lorient	Bldg. ..	..	..	..	9 6-in., 6 3-9-in. A.A., 8 M. A.A., 2 aircraft	6 21"	..	..	..
Improved La Galis- sonnière	La Galissonnière†						Brest .	1933								
	Jean-de-Vienne†						Lorient .	1935								
	Marseillaise†	7600	589 0	57 4	17 5	84,000 (G.)	St. Nazaire	1935	..	4½	Deck 1½	9 6-in., 8 3-5-in. A.A., 8 1-5-in. A.A., 4 seaplanes, 1 catapult	2 21-7" (D.)	31	1500	540
	Gloire .						Bordeaux	1935								
	Montcalm .						La Seyne	1935								
Suffren Class	Georges Leygues						St. Nazaire	1935								
	Algérie† .	10,000	610 3	65 8	23 0	84,000 (G.) Pen.	Brest .	1932	1,920,000	about 4	Deck 3	8 8-in., 12 3-9-in. A.A., 4 1-5-in., 16 M., 1 catapult, 2 seaplanes	2 21" (T.)	31	1900	746
	Dupleix .							1930	1,570,000							
	Foch† .	10,000	636 6	63 6	24 0	90,000 Rat.(G.)	Brest .	1929	1,450,000			8 8-in., 8 3-5-in. A.A., 6 1-46-in. A.A., 12 M., 3 seaplanes, 2 catapults	2 21" (T.)	32	1800	605
	Colbert† .							1928	1,270,000							
Duquesne Class	Suffren† .	10,000	643 0	65 0	24 0	90,000 Rat.(G.)	Brest .	1927	1,210,000			8 8-in., 8 3-in. A.A., 8 1-46-in. A.A., 12 M., 3 seaplanes, 2 catapults	2 21" (T.)	32	1800	605
	Tourville .						(Lorient .	1926								
	Duquesne† .	10,000	626 8	62 4	23 0	120,000 Rat.(G.)	Brest .	1925	..			8 8-in., 8 3-in. A.A., 8 1-46-in., 2 seaplanes, 1 catapult	2 21" (T.)	33-5	2000	620

GERMANY.—Battleships.

Class.	NAME.	Normal Displacement.	Length. (Extreme).	Beam.	Draught.	Horse-Power.	Type of Machinery and Boilers.	Where Built.	Date of Launch.	Cost.	Armour.					Armament.		Speed.	Coal. Oil.	Complement.
											Belt.	Deck above Belt.	Side Belt.	Bulkhead.	Heavy Guns.	Gun Position.	Torpedo Tubes.				Guns.
b.	"H" and "I".	40,000	..	..	..	..	..	..	Bldg. ..	£ ..	in.	..	..	in.	..	..	..	..	..	..
b.	Tirpitz . .	40,000	792	6 118	0 26	0 (G.)	Wilhelms-haven	Wilhelms-haven	1939 1941	..	..	..	..	..	..	..	8 15-in., 12 5-9-in., 16 4-7-in., 4 seaplanes, 2 catapults	..	abt. 28	..
b.c.	Scharnhorst §	26,000 (standard)	741	6 98	6 24	8 (G.) & D.	Wilhelms-haven	Wilhelms-haven	1936 1939	..	13	6	..	..	..	..	9 11-in., 12 5-9-in., 14 4-7-in. A.A., 16 1-5-in. A.A., 4 aircraft, 2 catapults	..	27	1461
b.c.	Gneisenau §	26,000 (standard)	741	6 98	6 24	8 (G.) & D.	Wilhelms-haven	Wilhelms-haven	1936 1938	..	13	6	..	..	..	..	9 11-in., 12 5-9-in., 14 4-7-in. A.A., 16 1-5-in. A.A., 4 aircraft, 2 catapults	..	27	1461
b.*	Lutzow (ex-Deutschland)	10,000 (standard)	609	8 67	6 19	0 56, 800	Deutsche Werke, Kiel	Deutsche Werke, Kiel	1931 1933	estimated 3,750,000	about 4	1 3	..	..	about 7	..	6 11-in., 8 5-9-in., 6 4-7-in. A.A., 8 1-5-in. A.A., 10 m., 1 catapult, 2 aircraft (Q.)	8 26	—	965
b.*	Admiral Scheer	10,000 (standard)	609	8 67	6 19	0 56, 800	Deutsche Werke, Kiel	Deutsche Werke, Kiel	1933 1934	estimated 3,580,000	about 4	1 3	..	..	about 7	..	6 11-in., 8 5-9-in., 6 4-7-in. A.A., 8 1-5-in. A.A., 10 m., 1 catapult, 2 aircraft (Q.)	8 26	1200	965
b.	Schlesien † . .	12,300	419	0 72	10 25	3	Schichau	Schichau	1906 1908	1,214,000	9 3/4	8	8	6	11-6	6 1/2	4 11-in., 10 5-9-in., 4 8-5-in. A.A., 23 m.	..	18	1771
b.	Schleswig-Holstein †	12,300	419	0 72	10 25	3	Schichau	Schichau	1906 1908	1,214,000	9 3/4	8	8	6	11-6	6 1/2	4 11-in., 10 5-9-in., 4 8-5-in. A.A., 23 m.	..	18	1771
A. O.	Graf Zeppelin	25,000	820	3 88	6 18	4	Deutsche Werke	Deutsche Werke	1938	..	3-4	1 3	..	..	..	..	16 5-9-in., 10 4-7-in., 8 A.A., 22 smaller, 40 aircraft	..	about 32	..
A. O.	"B"	25,000	820	3 88	6 18	4	Deutsche Werke	Deutsche Werke	1938	..	3-4	1 3	..	..	..	..	16 5-9-in., 10 4-7-in., 8 A.A., 22 smaller, 40 aircraft	..	about 32	..

AIRCRAFT CARRIERS.

† Reconstructed 1925-30. Classified as schoolships.
‡ Reported to be extensively damaged.

Consists of eight double acting two-stroke M.A.N. Diesels.

GERMANY.—Cruisers.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam. (Extreme.)	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour.	Armament.	Speed.	Fuel.	Complement.
		tons.	ft. ins.	ft. ins.	ft. ins.						£	Belt.	Guns. Torpedo Tubes.	knots.	Coal. Oil.	
cr.	Admiral Hipper.	10,000	639 9 W. L.	69 11	15 5	(G.)	Blohm and Voos	..	1937	1939	..	in.	8 8-in., 12 4 1-in. A.A., 12 1 45-in. A.A.; 3 aircraft, 1 catapult	32	..	1000
cr.	Prins Eugen §	10,000	654 6 W. L.	71 3	15 1	(G.)	Germania Werft Deschimag Deschimag	..	1938	1910	..	..	..	32	..	..
cr.	Seydlitz ex-Lutzow								1938	1940	..	..		
cr.	M, N, O and P	7300	584 0	55 6	15 9	80,000 (G.) & D.	Deutsche Werft, Kiel	..	Bldg.	..	..	..	8 5 9-in., 4 4-in., 1 aircraft	32	..	..
l.o.	Leipzig	6000	581 0	53 5	15 7	72,000† geared turbines 60,000, Diesels 12,000	Wilhelmshaven Kiel	Kiel	1929	1931	2,050,000	3-4	9 5 9-in., 8 5 5-in. A.A., 8 1 5-in. A.A.; 1 catapult, 2 aircraft	32	1500 (including Diesel oil)	656
l.o.	Nürnberg								1934	1935	..	..		
l.o.	Köln	6000	570 10	49 10	17 8	65,000†	Wilhelmshaven	Kiel	1928	1930	1,785,000	3	9 5 9-in., 6 5 5-in. A.A., 1 catapult, 2 aircraft	32	1200	592
l.o.	Emden *	5400	510 2	46 11	17 4	46,500 (G.)	Wilhelmshaven	Wilhelmshaven	1925	1925	..	4	8 5 9-in., 3 5 5-in. A.A., 4 M.	29	1260	630

* Training Ship.

† Three propeller shafts, of which the centre shaft is Diesel-driven and the others turbine-driven. Diesels used for cruising or combined with the turbines to give full speed.
 § Reported to be extensively damaged.

‡ Parsons geared turbines with Diesels for cruising.

GERMANY.—Miscellaneous Craft.

ESCORT VESSELS.—F 1, 4, 5, 8, 9 (1936), 600 tons, 240 feet, 28 knots, 2 4-1-in. 4 1-46-in., complement 103. Probably others, number unknown.
 GUNNERY TRAINING SHIPS.—Drache (1908), 790 tons, 15 knots, 4 4-1-in.; Fuchs (1919), 525 tons, 16 knots, 2 3-4-in.; Delphin; Mars; Eduard Jungman. Carl Zeiss.
 FISHERY PROTECTION VESSELS.—Weser and Elbe (Wilhelmshaven, 1931), 590 tons, 1600 H.P. (Diesel), 15 knots, 1 3-5-in. gun.

EXPERIMENTAL VESSELS.—Pelican and Nautilus (500 tons, 17 knots); Strahl, 1,643 tons, 10 knots; Stortebeker and Arkona, 525 tons, 16 knots, 1 4-1-in. gun.
 Klaus von Bayern (1911), 800 tons, 25 knots, 2 4-1-in.

MOTOR TORPEDO BOATS ("E" BOATS).—S. 7—17 (1934-38), and S 18—25 (1939), 70 tons, 1 m.g. A.A., 2 19-7-in. T.T.; S 26—50 (1939), 86 tons, 105-ft. 35 knots, 2 1-46-in. A.A. Probably others, number unknown.

PATROL VESSEL.—UZ (S) 18, 60 tons, 14 knots.
 TENDERS.—Hecht, Gazelle, Frauenlob, 525 tons, 16 knots. Nordsee, 830 tons, 12 knots; Taucher, 202 tons, 6-6 knots; Hai, Konigen Luise, 600 tons, 28 knots, 2 4-1-in.; Taku (1919), 430 tons, 16 knots, 1 4-1-in.

SAILING TRAINING SHIPS.—Gorch Fock (Hamburg, 1933); Three-masted barque, 238 feet in length, 1,500 tons, 500 H.P. auxiliary motor giving 8 knots; Horst Wessel (1936) and Albert Leo Schlageter (1938), 1,634 tons, 295 ft. 3 in. in length, 35 ft. 4 in. beam, 15 ft. 9 in. draught, 750 H.P., auxiliary motor giving 10 knots, complement 78, accommodation for 200 cadets. Training Vessels.—Nordsee (1914), 830 tons, 12 knots; Paul Beneke (1936), 460 tons, 13 knots; Dhame, Spree, Beowulf, Freyr, Frithlof, Wotan, Sigfrid Hagen, Hugin, Hildebrand, Odin, Volker, and Munin, 400 tons, 10 knots, 1 3-5-in., 1 m.

MOTOR MINESWEEPERS.—R 1—16 (1933-4), 85 ft., 44 tons, 700 H.P., 17 1/4 knots, 1 1-pr. gun; R 17—34 (1935-1938), R 34—40 (1939), 90 tons. Probably others, number unknown.

MINING AND BARRAGE VESSELS.—MT 1 and 2, 550 tons, 10 knots; 8 small craft (1906-15), 70 tons, 9 knots; I—IV (1936), 120 tons.

TARGET SHIPS.—Zähringen (ex-battleship), 11,800 tons, 13 knots; Hessen, 13,000 tons. Wireless controlled.

TARGET TUGS AND CONTROL SHIPS.—Komet and Blitz, 650 tons, 30 knots ex T.B.'s. Blitz is control ship for Zähringen.
 DEPOT SHIPS.—Tsingtau (1934), 1 970 tons, 17 1/2 knots, 2 3-5-in., 4 m.g.; Saar (1934), 2,710 tons, 16 knots, 3 4-1-in., 4 m.g.; Weichsel (1923), 3, 950 tons, 10 1/2 knots. Donau, 10 knots; Tanga (1939); Waldemar Kophamel and Wilhelm Bauer (1940); Erwin Wassner (1938), 5,000 tons; Brommy (1916), 380 tons, 16 knots, 1 4-1-in.; Raule (ex-Wacht), 1919; Von der Groeben (1919). Karl Peters and Adolf Luderitz (1940), 3,000 tons.

TORPEDO RECOVERY VESSELS.—Orkan (1916), 470 tons, 10 knots; ex-Torpedo Boats 123, 139, 155, 156, 157, 158, 196, 650 tons, 22 knots, 1 or 2 m. F 2, 7, 10 (1936), 600 tons, 240 ft., 28 knots, 2 4-1-in., 4 1-46-in., complement 103.

SURVEYING VESSELS.—Meteo (1924), 1,150 tons, 14 knots, one 3-4-in.; Hooge, Norderoog, Suderoog (1912), 90 tons. Triton.

MINESWEEPERS.—17 in number (1917-1919), 475-525 tons, 1,800 H.P., 16 knots, 1 4-1-in. gun; M 1—40 600 tons, 17 knots, 2 4-1-in. guns, 1 1-46-in.

OLERS.—Samland, 10,111 tons; Franken, Ditmarschen, Ermland, Westerwald. Probably others, number unknown.

U-BOAT TENDERS.—Memel, 998 tons, 13 knots; Mosel, 796 tons, 9 knots; Acheron, Jagd, 525 tons, 16 knots; Warnow, 728 tons gross, 13 knots; Leeb, 3,850 tons, 13 knots. SLOOPS.—Hela (1940), Grille (1935), 2,560 tons, 20 knots, 3 4-1-in., 2 1-46-in. A.A., 4 m.

MINELAYERS.—A, B, C, and D (1940); M.T.1, M.T.2 (1917), 550 tons, 10 knots, 1 m.; C. 1, 3, 5, 9, 10, 14, 16, 21-30, 80 tons, 9 knots. Probably others, number unknown.

HOSPITAL SHIPS.—8 in Number.

RIVER MINESWEEPERS.—FHR 1-12. 4 tons, 2 m.

TUGS.—Number unknown.
 For Destroyers, Torpedo Boats and Submarines, see Flotilla Tables.

RIVER PATROL VESSELS.—Birago (1916), 60 tons, 11 knots; Bechelaren (1932), 185 tons, 16-8 knots, 4 2-6-in. 4 m.

GREECE.†

Class.	NAME,	Standard Displacement.	Length. (Extreme).	Beam.	Draft.	Horse-Power. Type and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal. Oil.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position. Heavy Guns.	Second-ary.	Guns.	Torpedo Tubes.			
cr.	Giorgios Averoff*	tons. 9901 462	ft. 462	ft. 69	ft. 24½	19,000 (21,500 t) B.	Leghorn (Orlando)	1910	1911	£ 1,100,000	in. 8-3½ K.S.	in. 1½	in. 7	in. 7	in. 8-6½	in. 7	4 9 2-in., 8 7 5-in., 16 3-in., 4 3-pr., 2 3-in. A.A., 2 M. 18-in.	8 (sub.)	knots. 22½ (24 t.) †	tons. 1500 —	620

* Retubed and refitted 1932. † Probable speed 15 knots.

TRAINING SHIP.—Ares (1929), 1,870 tons, 11 knots, four 3-in. guns.

REPAIR SHIP.—Hephestos (1920), 4,549 tons gross, 11½ knots, four 4-in. A.A.

M.T.B's., T1 and T2, Thornycroft type, 55 ft., 37 knots, two Lewis guns 2 r.r., 4 built at Venice, for Customs Service T3 and T4, 66 ft., 43 knots, 32 tons, 2 r.r., building.

DESPATCH VESSEL AND MINELAYER.—Tenedos, 450 tons, 13 knots, 40 mines.

COAST DEFENCE VESSEL.—Lemnos (ex-U.S.N. Idaho) (1908).

CORVETTE.—Saktouris (ex-British Flower Class).

† Under the control of Germany. Part of the Greek Fleet is in British Hands.

For Destroyers, Torpedo Boats and Submarines, see Flotilla Tables.

ITALY.—Battleships.

Class.	NAME.	Standard Displacement.	Length (Extreme).	Beam.	Draught.	Horse-Power, Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.					Armament.		Speed.	Fuel.	Complement.
		tons.	ft. ins.	ft. in.	ft.					£	Belt.	Side above Belt.	Bulkhead.	Heavy Guns.	Second-ary.	Guns.	Torpedo Tubes.	knots.	tons.	
b.	Roma*	35,000	774 0	106 6	28	130,000 P.T. (G.)	Trieste	1940	1942	..	10	..	..	..	..	{ 9 15-in., 12 6-in., 12 3-5-in., 40 A.A. M.G., 2 catapults, 3 aircraft	..	30	..	1600
b.	Impero*						Genoa (Ansaldo)	1939	..		..	..	..	..	..
b.	Littorio*						Genoa (Ansaldo)	1937	1940		..	..	..	..	..
b.	Vittorio Veneto						Trieste	1937	1940		..	..	..	..	..
b.	Andrea Doria†	..	..	..	..	..	Spezia	1913	1916	..	10-4 1½ K.S.	6 K.S.	..	9½ K.S.	6 K.S.	{ 10 12-5-in., 12 5-3-in., 10 3-5-in., 33 A.A. M.G., 1 catapult, 1 aircraft	{ ..	27	2000	1074
b.	Caio Duilio†						Castellammare	1913	1915		..	..	..	..	..
b.	Conte di Cavour†	23,622	611 6	92 0	30	75,000 (G.)	Spezia	1911	1915	..	10-4½ 1½ K.S.	6 K.S.	..	9½ K.S.	5 K.S.	{ 10 12-6-in., 12 4-7-in., 8 3-9-in. A.A., 36 A.A. M.G., 2 catapults, 4 aircraft	{ ..	27	2000	1200
b.	Giulio Cesare†						Genoa (Ansaldo)	1911	1914		10-4½ 1½ K.S.	6 K.S.	..	9½ K.S.	5 K.S.					

* Building ceased through lack of materials.

† Reconstructed 1940.

‡ Reconstructed 1937.

ITALY.—Cruisers, &c.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Torpedo Tubes.	Speed.	Fuel. Oil.	Complement.
											Side Deck.	Gun Position.				
Improved Condottieri Class	{ Luigi di Savoia Duca degli Abruzzi Giuseppe Garibaldi }	7874	613 9	61 0	17	100,000 (P.T. (G.)	{ Odero-Terni, Or- lando Spezia Cantieri Riuniti dell' Adriatico, Trieste }	1935	1936	..	Abt. 6	..	2 21"	35	1200	600
Attendolo Class	{ Eugenio di Savoia Emanuele Fil- berto, Duca d'Aosta }	7283	610 3	57 4	16 4	110,000 (G.)	{ Ansaldo, Genoa Orlando, Leghorn }	1935	1936	..	About 4½	..	6 21"	36½	1200	550
Condottieri Class	{ Raimondo Montecuccoli Muzio Attendolo }	6941	597 9	54 6	14 2	106,000 (P.T.)	{ Ansaldo, Genoa Trieste }	1934	1935	..	..	..	2 21"	37	1200	520
Modified Trento Class	Bolzano .	10,000	646 3	67 8	18 0	150,000 (G.) A.	Ansaldo, Genoa	1932	1933	..	Abt. 3	..	8 21"	36	3000	800
Condottieri Class	Luigi Cadorna .	5008	554 6	50 10	14	95,000 (G.)	Stabilimento Tec- nico Triestino, Trieste	1931	1933	..	2 2	..	4 21"	37 (39½ t.)	1000	530
Zara Class	Gorizia .	10,000	599 9	67 7	19 6	95,000 (G.)	Odero-Terni, Or- lando	1930	1931	..	About 6 2	..	—	32	2200	800

ITALY.—Cruisers, &c.—*continued*.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draft.	Horse-Power. Type of Machinery.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Fuel.	Complement.
											Side Deck.	Gun Position.	Guns.	Torpedo Tubes.		Coal.	
Trento Class	Trieste †	10,000	645 0	67 9	18	150,000 (G.)	Stablemento Tecnico, Trieste	1927	1929	£ ..	In. 2½ 2	In. ..	8 8-in., 12 8-9-in. A.A., 4 1-57-in., 8 5-in. A.A. M., 1 catapult, 2 seaplanes (D.) 21"	8	knots. 36	— 3000	800
l. c.	Bari (ex-German Pillau)	3248	443 11	44 7	13½	28,000 tur.	Danzig (Schichau)	1914	1915	..	3 1½ 3	1	8 8-9-in., 3 3-in. A.A., 3 M., 120 mines	—	27.5	984 250	872
l. cr.	Taranto (ex-German Strassburg)	3184	455 0	42 2	12½	27,000 P.T. T.S.	Wilhelmshaven	1911	1914	416,840	4-2½ 2	2	7 5-9-in., 2 3-in. A.A., 3 M., 120 mines, 1 aircraft	—	21	1200 130	373
s.c.	Miraglia *	4882	397 0	49 8	17	12,000 P.T.	Spezia . .	1923	1927	..	..	..	4 4-in. A.A., 4 M., 2 catapults, 16 planes	—	21.5	— 440	300
cr. .	Ammiraglio Constantza Ciano	8000	..	..	..	..	..	Bldg.	..	..	..	..	— 6-in. guns	..	..	..	..
l. cr.	Cornelio Silla Paolo Emilio Attilio Regolo Scipione Africano Caio Mario Claudio Tiberio Pompeo Magno Ottaviano Augusto Ulpio Traiano Claudio Druso Vipsanio Agrippa Giulio Germanico	3860	444 3	44 9	13	120,000	Genoa Leghorn Spezia . . Ancona Palermo Trigoso Naples . .	Bldg.	..	..	..	..	8 5-3-in., 6 2-5-in., 14 M. A.A., carries mines	8 21"	41	..	..

* Ex-merchant ship, taken over on the stocks. Aircraft transport.

† Fleet Flagship.

COMBINED MINELAYERS AND MINESWEEPERS.—**Fasana, Buccari, Durazzo, and Pelagosa**, completed 1926, 531 tons, 10 knots (I.C. machinery), 1 3-in. gun, 100 mines; **Azio, Legnano, Lepanto**, completed 1926-7, 615 tons, 15 knots (recip.), 2 4-in., 1 3-in., 80 mines; **Crotone, Viesti**, 859 tons, 195 ft., 1,600 H.P., 14 knots, 2 4-in. guns, 70 mines.

MINELAYERS.—**Laurana, Rovigno, and Albona (ex-Austrian)**, 112 tons, 11 knots, 1 8-in.; fourteen converted merchant vessels, 12-15 knots.
MINESWEEPERS.—39 in number, 150 tons, 14 knots, 1 3-in. gun; **P. Matteucci, M. Sonzini** (1924), 188 ft., 620 tons, 9 knots, 2 3-in.; **R.D.I.—57**, 188 tons, 10 knots, 1 3-in.
OIL TRANSPORTS.—**Tarvisio**, 10,910 tons, 11 knots, 4 4-7-in. 2 3-in.; **Stige**, 1,342 tons, 8 knots, 1 4-7-in., 1 3-in.; **Uranio**, 10,550 tons, 11 knots, 2 4-7-in., 2 3-in.; **Prometeo**, 1,080 tons, 11 knots, 2 3-in.; **Nettuno**, 9,555 tons, 14 knots, 3 4-7-in., 2 3-in.; **Cocito, Lete**, 1,162 tons, 10 knots, 3 3-in., **Cerere**, 2,530 tons, 10 knots, 1 4-7-in., 2 3-in.; **Marte**, 10 knots, 2 3-in.

RIVER GUNBOAT.—**E. Carlotto** (1918), 180 tons, 14 knots, 2 3-in. A.A. guns.
ESCOPT GUNBOATS.—**A. Baffio, E. Giovannini** (1922), 182 tons, 23 knots, 2 4-in. guns, 2 T.T.; **Orsa, Orione, Procione, Pegaseo** (1938), 293 ft., 855 tons, 28 knots, 2 8-9-in., 8 M.G.

SURVEYING VESSELS.—**Ammiraglio Magnaghi** (1914), 1506 tons, 14 knots, 4 3-in.; **Cariddi** (1916), 380 tons, 10 knots, 1 3-in. gun; **Cherso**, 3,988 tons, 10½ knots, 4 4-7-in. guns.
PATROL VESSELS.—**Cirone** (1912), 384 tons, 10 knots, 2 3-in.; **Rimini** (1912), 319 tons, 9½ knots, 1 3-in. gun; **Gallipoli** (1911), 310 tons, 10½ knots, 2 3-in. guns; **Otranto** (1911), 290 tons, 10 knots, 2 3-in. guns; **Alula** (1912), 308 tons, 13 knots, 1 3-in. gun; **Palmaiola** (1902), 472 tons, 8½ knots, 1 3-in.; **Aurora**, 935 tons, 14½ knots, 2 2½-in.; **Illiria** (1918), 654 tons, 11 knots.

TRAINING SHIPS.—**Cristoforo Colombo** (Castellamare, 1928), 2,787 tons, 10 knots (Diesel-electric) 4 8-in. guns, 2 A.A. M.G.; **Amerigo Vespucci** (Castellamare, 1931), 3,543 tons, 1,800 H.P. (Diesel-electric), 11 knots, 4 3-in. A.A., 2 A.A. M.G.

SUBMARINE DEPOT SHIPS (Sloops).—**Volta and Pacinotti** (1924), 2,730 tons, 19 knots, 4 3-in. A.A.; **Sebastiano Cabota** (1912), 778 tons, 13 knots, 6 3-in., 4 M.

CABLE SHIPS.—**Citta di Milano** (5,300 tons), 10 knots; **Giasone**, 1192 tons, 250 ft., 15 knots.
TUGS.—87 in number, 100-300 tons, 8-13 knots, some fitted with 1 3-in. gun.

WATER CARRIERS.—**Dalmazia, Istria**, 2,900 tons, 10 knots, 1 4-7-in., 1 3-in.; **Flegelonte**, 1,162 tons, 9 knots, 3 3-in. A.A.; **Verde, Pagano**, 1,432 tons, 9 knots, 1 4-7-in., 1 3-in. A.A.; **Ticino**, 2,588 tons, 9½ knots, 2 3-in.; **Isonzo, Po, Volturmo**, 11½ knots, 2 4-in., 4 m.g.; **Servia, Tirso**, 9½ knots, 4 m.g.; **Mincio, Bormida**, 645 tons, 9 knots; **Sesia, Garigliano**, 1,050 tons, 9½ knots, 4 m.g.; **Adige** (1928), 780 tons, 8 knots; **Arno and Brenta** (1929), 630 tons, 9 knots; **Garda, Verbano, Sebeto, Metauro, Sile** (1934), 592 tons, 9 knots; **Frigido** (1912), 398 tons, 9 knots.

MOTOR TORPEDO BOATS.—**M.A.S. 423-437**, 15 tons, 45 knots, 2 18-in. T.T., 5 depth charges; **M.A.S. 438-441**, 35½ tons; **M.A.S. 501-516**, 47 knots, 2 18-in. T.T., 6 depth charges; **M.A.S. 517-551**, 20 tons, 47 knots, 1 m.g., 2 18-in. T.T.; **General Stefano Turri** (1939), 34 knots, 2 M., 4 18-in. T.T.

TRANSPORT SHIPS.—**Luissin**, 3,388 tons, 10½ knots, 4 4-7-in., 2 3-in.; **Tripoli**, 2,460 tons, 8½ knots; **Panigaglia, Vellelunga, Bufoluto** (Ammunition transport ships), 916 tons, 11 knots, 2 3-9-in.; **Enrichetta**, 8,360 tons, 9½ knots.

LIGHTHOUSE TENDERS.—**Lante**, 295 tons, 12 knots, 2 3-in.; **Bianco**, 258 tons, 11½ knots, 2 3-in.; **Lutti**, 266 tons, 12 knots, 1 3-in.; **Levanzo**, 226 tons, 11 knots, 2 3-in.; **Scilla**, 350 tons, 9 knots, 1 3-in.; **Lido**, 226 tons, 12 knots, 1 3-in.

MONITORS.—**Faa di Bruno** (1917), 2,796 tons, 3-3 knots, 2 15-in., 6 3-in.; **Monte Grappa, Montello** (1919), 605 tons, 7 knots, 1 12-in., 2 3-in.; **Monte Cengio, Monte Novegno** (1919), 502 tons, 7 knots, 1 12-in., 4 3-in.

TARGET SHIP.—**San Marco, Old Cruiser** (wireless controlled).

ESCOPT VESSEL.—**Eritrea**, 2,172 tons, 20 knots, 4 4-7-in. guns, fitted for minelaying.

REPAIR SHIP.—**Quarnaro** (1927), 7,185 tons, 11½ knots, 3 4-in.

MOTOR VEDETTE.—**Vigilante, Vedetta** (1938), 85½ ft., 70 tons, 400 H.P. (D.) 12-3 knots, 1 3-in.

HOSPITAL SHIPS.—**Aquila, Arno, California, Citta da Trapani, Cradiscia, Sicilia, Tevere, Toscana, Virgilio**.

SALVAGE SHIPS.—**Ciclope** (1903), 1,050 tons, 13-5 knots, 1 3-in.; **Teseo** (1915), 1,250 tons, 16 knots, 2 8-in.; **Anteo** (1912), 1,250 tons, 8 knots. **Titano** (1913), 828 tons, 14 knots, 1 3 in.

For Destroyers, Torpedo Boats and Submarines, see *Flotilla Tables*.

YACHT.—**Savoia** (1925), 5,280 tons, 21 knots, 4 3-in.

JAPAN.— Battleships.

Type.	NAME.	Standard Displacement.	Length (Extreme).	Beam.	Draught.	Horse-Power, Type and Boilers.	Where Built.	Date of Launch.	Cost.	Armour.				Armament.		Speed.	Fuel.	Complement.
		tons.	ft. ins.	ft. ins.	ft. ins.					Belt.	Deck.	Side above Belt.	Bulkhead.	Heavy Guns.	Second-ary.	Torpedo Tubes.	tons.	
	I.	45,000	..	..	..	..	Kure	1939	..	..	..	..	..	..	..	..	..	..
	II.						Yokosuka	1941										
	III.						Nagasaki	1942										
	IV.						Kobe	Bldg.										
	V.						Kure	Bldg.										
Fuso Class	Fuso	29,330	673	094	028	40,000 B.C.T. K.	Kure	1914	1915	12	3	8	..	12	6	12 14-in., 16 6-in., 8 5-in. A.A., 4 M., 4 L., 3 sea-planes, 1 catapult	4500	1300
Yamashiro	Yamashiro						Yokosuka	1915	1917	12	3	8	..	12	6	12 14-in., 16 6-in., 8 5-in. A.A., 4 M., 4 L., 3 sea-planes, 1 catapult	4500	1300
Hyuga Class	Hyuga	29,900	683	094	028	45,000 P.T. K.	Nagasaki	1917	1918	12	3	8	..	12	6	12 14-in., 16 6-in., 8 5-in. A.A., 4 M., 4 L., 3 sea-planes, 1 catapult	4500	1300
Ise Class	Ise						Kobe	1916	1917	12	3	8	..	12	6	12 14-in., 16 6-in., 8 5-in. A.A., 4 M., 4 L., 3 sea-planes, 1 catapult	4500	1300
Kirishima Class	Kirishima	29,330	704	095	027	61,000 P.T. K.	Nagasaki	1918	1915	12	3	8	..	12	6	12 14-in., 16 6-in., 8 5-in. A.A., 4 M., 4 L., 3 sea-planes, 1 catapult	4500	1300
Kongo Class	Kongo						Barrow	1912	1913	12	3	8	..	12	6	12 14-in., 16 6-in., 8 5-in. A.A., 4 M., 4 L., 3 sea-planes, 1 catapult	4500	1300
Haruna Class	Haruna						Kobe	1913	1915	12	3	8	..	12	6	12 14-in., 16 6-in., 8 5-in. A.A., 4 M., 4 L., 3 sea-planes, 1 catapult	4500	1300
Hiyeyama Class	Hiyeyama						Yokosuka	1912	1914	12	3	8	..	12	6	12 14-in., 16 6-in., 8 5-in. A.A., 4 M., 4 L., 3 sea-planes, 1 catapult	4500	1300
Mutsu Class	Mutsu	32,720	700	095	030	80,000 (G.) K.	Yokosuka	1920	1921	12	9	3½	..	14	..	8 16-in., 20 5-5-in., 8 5-in. A.A., 8 A.A. M.G., 3 sea-planes, 1 catapult	3400	1304
Nagato Class	Nagato						Kure	1919	1920	12	9	3½	..	14	..	8 16-in., 20 5-5-in., 8 5-in. A.A., 8 A.A. M.G., 3 sea-planes, 1 catapult	3400	1367

ARMoured CRUISERS now rated as COAST-DEFENCE SHIPS (1st class), completed 1899-1904: Kasuga, 7080 tons, 20 knots, 1 10-in., 2 8-in., 14 6-in.; Yakumo, 9010 tons, 16 knots, 4 8-in., 12 6-in., 5 3-in.; Adzuma, 8640 tons, 16 knots, 4 8-in., 12 6-in., 5 3-in.; Idzumo and Iwate, 9180 tons, 16 knots, 4 8-in., 14 6-in., 6 3-in.; Asama, 9240 tons, 21½ knots, 4 8-in., 12 6-in., 5 3-in., used as a training ship.

* Reconstructed 1936.

† Modernised 1934.

‡ Modernised 1928-1931, including fitting of bulges and new foremast, and conversion to oil burning.

JAPAN.—Aircraft Carriers.

Class.	NAME.	Standard Displacement.	Length. (Extreme).	Beam.	Draught.	Horse-Power. Type and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cort.	Armour.		Armament.	Speed.	Fuel. Oil.	Complement.
											Side Deck.	Gun Position.				
A.O.	Hosho (Hosyo)†	7,470 tons.	510 ft. b.p.	48 ft. 62	15 ft. 0	30,000 (G.) K.	Tsurumi. (Asano)	1921	1922	2	in.	in.	4 5.5-in., 2 3-in. A.A., 20 aircraft	—	tons. 2700	550
S.O.	Kamoi §	17,000	495	67	28 ft. 0	8,000 G.C.T. and electric drive	New York S.B. Co.	1922	1922 (converted 1933)	..	..	..	2 5.5-in., 2 3-in. A.A., 15 seaplanes	—	4000	..
S.C.	Notoro §	14,050	455 ft. b.p.	58	26 ft. 6	5,850 recip.	Kobe (Kawasaki)	1920	1920	..	..	..	2 4.7-in., 2 3-in. A.A., 16 seaplanes	—	1000	155
A.O.	Ryujo †	7100	548	60 ft. 8"	15 ft. 0	40,000 (G.)	Yokohama	1931	1933	..	..	..	12 5-in., A.A., 30 aircraft	—	oil 600	600
S.O.	Chitose (Titose)	9,000	577½	61 ft. 8"	19 ft. 0	15,000 tur. & t.b. 9,000	Kure	1936	1938	..	..	..	6 5-in. A.A., 12 A.A. M.G.	—	..	..
S.O.	Chiyoda (Tiyoda)							1937	1938							
S.C.	Nisshin							1939	1941							
S.O.	Kamikawa	..	..	..	..	..	Kobe	..	1937	..	..	..	2 3-in., 10 seaplanes	—	..	..
A.O.	Shokaku	20,000	..	..	..	(G.)	Yokosuka	1939	1941	..	..	..	45 Aircraft.	—	..	..
A.O.	Zuikaku	20,000	..	..	..	(G.)	Yokosuka	1939	1941	..	..	..	45 Aircraft.	—	..	..

† Fitted with gyro-stabiliser.

§ Converted from oilers.

JAPAN.—Cruisers.

Class.	N.A.M.E.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery.	Where Built.	Date of Launch.	Date of Completion.	Cost	Armour.	Armament.	Speed.	Fuel. Coal. Oil.	Complement.
	I.			ft.			Mitsubishi	1940		£	in.	6 12-in.	33	tons.	
	II.			..	..	..	Maizuru	Bldg.	..	..	6	..	..	..	..
	III.			..	..	..	Yokosuka	Bldg.	..	..	..	..	..	..	..
	IV.			..	..	..	Yokosuka	Bldg.	..	..	..	..	..	..	..
	V.			..	..	..	Kure	Bldg.	..	..	..	..	..	..	..
	Tone	8500	614.3	63	14'7"	90,000 (G.)	Nagasaki	1937	1938	..	2	12 6-1-in., 8 5-in. A.A., 4 3-in. 6 M.G., 4 aircraft, 2 catapults	4 21-in. a.w. (T.)	..	..
	Tikuma	8450	w.l.	..	..	..	..	1938	1939	..	2	..	..	..	..
	Suzuya	8500	640	59½	14'9"	90,000 (G.)	Yokosuka	1934	1936	2,500,000	2½	15 6-1-in., 8 5-in. A.A., 4 3-in. 12 M.G., 2 catapults, 4 aircraft	4 21-in. a.w. (T.)	..	..
	Kumano	..	..	..	..	..	Kawasaki	1936	1937	estimated	2	..	..	..	..
	Chokai.	..	..	..	..	..	Nagasaki	1931	1932	..	3-4	10 8-in., 4 4-7-in. A.A., 8 A.A. M.G., 2 catapults, 4 sea-planes	8 21-in. a.w. (T.)	2000	692
	Maya	..	..	..	..	..	Kobe	1930	1932	..	3-5	..	..	..	..
	Atago	..	..	..	..	..	Kure	1930	1932	..	..	..	..	..	..
	Takao	..	..	..	..	..	Yokosuka	1930	1932	..	..	..	..	..	..
	Ashigara	..	..	..	..	..	Kobe	1928	1929	..	3-4	..	..	..	..
	Haguro	..	..	..	..	..	Nagasaki	1928	1929	..	3-5	10 8-in., 8 4-7-in. A.A., 2 M., 2 catapults, 4 sea-planes	12 21-in. a.w.	—	750
	Myoko	..	..	..	..	..	Yokosuka	1927	1929	..	..	..	..	..	..
	Nachi	..	..	..	..	..	Kure	1927	1928	..	..	..	..	..	..
	Kinugasa	..	..	..	..	..	Nagasaki	1926	1927	..	..	..	..	..	..
	Aoba	..	..	..	..	..	Kawasaki, Kobe	1926	1927	..	..	..	..	..	..
	Furutaka	..	..	..	..	..	Nagasaki	1925	1926	..	..	..	..	..	..
	Kako	..	..	..	..	..	Kawasaki, Kobe	1925	1926	..	..	..	..	..	..
	Abukuma	..	..	..	..	..	Uraga	1923	1925	..	..	..	..	..	..
	Isuzu	..	..	..	..	..	Uraga	1921	1923	..	..	..	..	..	..
	Nagara	..	..	..	..	..	Sasebo	1921	1922	..	..	..	..	..	..
	Natori	..	..	..	..	..	Nagasaki	1922	1922	..	..	..	..	..	..
	Yura	..	..	..	..	..	(Mitsubishi)	1922	1922	..	..	..	..	..	..
	Kinu	..	..	..	..	..	Sasebo	1922	1923	..	..	..	..	..	..
	Kawasaki	..	..	..	..	..	Kawasaki	1922	1922	..	..	..	..	..	..

Sendai Class	Jintsu	5195	535	47½	90,000 (G.)	Kawasaki	1925	2	7 5.5-in., 2 3-in. A.A., 5 m., 1 seaplane, 1 catapult, 80 mines	4 21-in. a.w. (D.)	33-0	300 1260	450
	Naka					Yokohama	1925	—					
	Sendai					Nagasaki	1923						
	Kiso					Nagasaki	1920						
	Kitakami					Sasebo	1920						
	Kuma	5100	535	47½	70,000 (G.)	Sasebo	1919	2	7 5.5-in., 2 3-in. A.A., 6 m. A.A., 1 seaplane, 80 mines	4 21-in. a.w. (D.)	33-0	300 1260	439
	Oi					Kobe	1920	—					
	Tama					Nagasaki (Mitsubishi)	1920						
	Tatsuta	3230	468	40½	51,000 (G.)	Sasebo	1918	..	4 5.5-in., 1 3-in. A.A., 2 m., fitted for minelaying, 1 seaplane	2 18-in. (T.)	31	— 900	332
	Tenryu					Yokosuka							
	Yubari	2890	465	39½	57,000 (G.)	Sasebo	1923	..	6 5.5-in., 1 3-in. A.A., 2 m. 84 mines	2 21-in. a.w. (D.)	33	— 830	328
	Kashii					Yokohama	1940	..	4 5.5-in., 2 5-in. A.A.,	4 T.T.	18	..	..
	Katori	6000						..				..	..
	Kashima							..				..	..
	Ning Hai*	2500						..	6 5.5-in., 6 3.5-in. A.A.	4 21-in.	23	..	..
	Ping Hai*							..				..	..

MINELAYERS.—Katsuriki (1917), 1540 tons, 13 knots, 3 3-in., 150 mines; Itsukushima (Uraga, 1929), 1970 tons, 16 knots, 3000 H.P. (Diesel), 3 5.5-in., 2 3-in. A.A., 250 mines; Tokiwa, 9240 tons, 21 knots, 2 8-in., 8 6-in., 3 3-in., and 19 smaller vessels, 300—400 tons, about 12 knots, 2 3-in., 45 mines. Okinoshima (1936), 4400 tons, 9000 H.P., 20 knots, 4 5.5-in., 4 m.g.; Sirakami, Aotaka, Hatsutaka, Sokuten, Nariju, Kyosai, Kunayiri, Ishigaki (1939), 720 tons, 20 knots, 2 4.7-in. Nos. 7—12 (1939) 630 tons, 20 knots, 3 4.7-in. MISTWEEPERS.—Nos. 1, 2, 3 (1923), No. 4 (1925), and Nos. 5, 6 (1929), 615 tons, 20 knots, 2 4.7-in., 1 3-in. A.A. Nos. 7—12 (1939) 630 tons, 20 knots, 3 4.7-in.

2 M. Nos. 13—14 (1933), and Nos. 15—18 (1935-36), 492 tons, 20 knots, 2 4.7-in. guns. GUNBOATS.—Saga (1912), 685 tons, 15 knots, 1 4.7-in., 3 3-in. A.A.; Ataka (1922), 725 tons, 16 knots, 2 4.7-in., 2 3-in. A.A.; Yodo, 1320 tons, 22 knots, 2 3-in.; Uji (and others), 3 4.7-in.

RIVER GUNBOATS.—Futami (1930), Atami (1929), 170 tons, 16 knots, 13-in. gun; Katada, Hira, Hodzu, Seta (1923), 305 tons, 16 knots, 2 3-in. A.A.; Toba (1911), 215 tons, 15 knots, 2 3-in.; Kotaka (1930), 50 tons, 15 knots, 5 m.g.; Fukushima (1939), 320 tons, 16.5 knots, 1 3-in. A.A.

SUBMARINE DEPOT SHIPS.—Taigai (1934), 10,000 tons, 689 feet, 13,000 H.P., 20 knots, 4 5-in. A.A.; 1 seaplane; Chogei (1924), Jingei (1923), 5160 tons, 16 knots, 4 5.5-in., 2 3-in. A.A. 1 seaplane; Komahashi (1914), 1125 tons, 13.9 knots, 2 3-in., 1 3-in. A.A.; Karasaki (1896), 9750 tons, 13 knots, 1 3-in., 1 3-in. A.A. 1345 tons, 16 knots, three

ANTI-SUBMARINE NETLAYERS.—Yayeyama (1932), 1135 tons, 4800 H.P. (reciprocating machinery), 20 knots, 2 4.7-in. A.A.; Shirataka (1929), 1345 tons, 16 knots, three 4.7 in. A.A. guns. Tsunabe and Kamome (1929), 450 tons, 19 knots, 1 3-in. Natsushima, Sarujima and Nasami, 443 tons, 19 knots, 2 3-in. guns.

SUBMARINE CHASERS.—Nos. 1, 2, 300 tons, 24 knots, 4 m.g.; Nos. 4-13, 270 tons, 20 knots, 4 m.g.; 51-53, 170 tons, 23 knots, 4 m.g. REPAIR SHIP AND SUBMARINE SALVAGE SHIP.—Asahi (ex-Battleship, 12,000 tons), 18 knots, 2 5-in. Repair Ship—Akashi (1939), 9000 tons, 19 knots, 4 5-in. A.A. 4 Salvage Ships. 2 Cable Ships. Transports and other auxiliaries. ICEBREAKER.—Odumari (1921), 2330 tons, 13 knots, 1 3-in. TARGET SHIP—Settsu, 16,130 tons.

ARMED OILERS.—Takasaki and Tsurugisaki (1937), 12,000 tons, 19 knots, 4 5-in. guns. Naruto, Hayayomo, Ondo, Iro, Tsurumi, Shiriya, Sata, (1920-23), 14,050 tons, 12 knots, 2 5.5-in., 2 3-in. A.A. Sunosaki (1918), 8800 tons, 14 knots, 2 4.7 in., 2 3-in. A.A. SURVEYING SHIP.—Koslin, 2080 tons, 10.3 knots, 2 3-in.

TRAINING SHIPS.—Shikishima, 11,275 tons; Fuji, 9,179 tons. TRANSPORTS.—Mamiya, 15,820 tons, 14 knots, 2 5.5-in., 2 3-in. A.A. SHIRIYA, Seta, and Erimo (1920-22), 14,050 tons, 2 5.5-in., 2 3-in. A.A. AUXILIARY SEAPLANE CARRIERS (MERCHANT SHIP CONVERSIONS).—Kagu Maru, Kamikawa Maru, Kinugasa Maru, 6,800 tons (gross), 17 knots; Takyu Maru, Yagasa Maru.

MOTOR TORPEDO BOATS.—Number unknown. For Destroyers, Torpedo Boats and Submarines, see Flotilla Tables.

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NETHERLANDS*

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draft.	Horse-Power. Type and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.				Armament.		Speed.	Complement.			
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.	Heavy Gun.		Second A.T.	Guns.	Fuel.	Coal.	Oil.
cr.	Sumatra . . .	6670 tons.	509½	52½	18	72,000 tur.	Amsterdam	1920	1926	£ ..	in. 3	in. 1	in. ..	in. 4	in. ..	10 5.9-in., 6 1.5-in., 6 5-in., A.A., 8 in., 12 mines, 2 sen. planes	—	knots 31	— tons.	—	525
a.g.b.	Brinio . . .	530	172½	28	9½	1500 Diesel	Amsterdam	1912 1913	1914 1915	£ ..	2	..	..	..	..	4 4.1-in., 2 M.	—	14	34	63
"	Gruno . . .										K.S.
a.d.a.	Hertog Hendrik † .	4371	317	50	19	6282 t.	Amsterdam	1902	1904	347,500	6	2	..	10	3	1 9.4-in., 4 5.9-in., 2 3-in., 6 1-pr., 2 M.	—	16.5	710	302	
c.	Gelderland . . .	3512	310	48½	17	9750 Recip. Y.	Rotterdam	1898	1900	£ ..	4	2	..	..	..	8 4.7-in., 4 3-in., 3 1.5-in., 6 M.	—	18	900	325
l.or.	Tromp . . . Jacob van Heemskerck	3350	433	40½	15	56,000	Amsterdam	1937	1938	£ ..	2	1	..	..	..	6 5.9-in. in Tromp; 10 4-in. in Heemskerck, 4 1.5-in. A.A., 4 5-in., 2 seaplanes.	6 21-in.	32½	—	330

† Training ship.

MINELAYERS.—Doutwe Aukes (1922), 687 tons, 13 knots, 3 3-in. A.A., 2 M., 130 mines; Medusa (1911), 593 tons, 11.5 knots, 3 3-in., 1 M., 65 mines; four old vessels, 240 tons, 7 knots, 2 1.5-in. Willen van der Zaai, 1350 tons, 15 knots, 2 4.7-in., 4 1.5-in., 4 M., 120 mines; Prins Van Oranje (1932), 1291 tons, 15 knots, 2 3-in., 2 1.5-in., 2 M., and 1 aircraft; Jan Van Brakel (1936), 1350 tons, 15 knots, 2 3-in., 1 1-pr., 4 M.

MINESWEEPERS.—I.—III., 200–235 tons; Abraham van Der Hulst, Jan van Gelder, Pieter Florisz, Abraham Crijnssen (1937), 525 tons, 15 knots, 1 3-in., 4 M. SURVEYING VESSELS.—Eilerts de Haan (1919), 312 tons, 12 knots; Hydrograf (1911), 260 tons, 9 knots.

SUPPLY SHIP.—Zuiderkruis (1923), 2600 tons, 12½ knots.

SUBMARINE DEPOT SHIP.—Cornelius Drebber (1915), 688 tons, 170 H.P. (Diesel), 6 knots, 1 1.5-in.

SLOOPERS.—Van Kinsbergen (1939), 1760 tons, 25 knots, 4 4.7-in. guns; Flores, Soemba (1927), 1500 tons, 14½ knots, 3 5.9-in., 1 3-in., 6 M.

RIVER GUNBOATS (1877–9) ; Hefring, Braga, Tyr and Freyt, 244 tons, 7–8 knots, 1 4.7-in. 2 1-pr., 1 M.

POLICE AND CUSTOMS VESSELS.—Seventeen in No., armed with 2 3-in. guns, 12–20 knots, 600–1000 tons.

MOTOR TORPEDO BOATS.—*ex-British*. Number unknown.

MOTOR GUNBOATS.—*ex-British*. Number unknown.

MOTOR MINESWEEPERS.—*ex-British*. Number unknown.

* Under the control of Germany.
For Destroyers, Torpedo Boats and Submarines, see Flotilla Tables.

NORWAY.*

Class.	NAME.	Normal Displacement.	Length. (Extreme.)	Beam.	Draft.	Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Fuel.		Complement.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Torpedo Tubes.	Guns.		Heavy Guns.	Second-ary.		Guns.	Fuel.	Coal.	Oil.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.			in.		

PATROL VESSELS.—Nordkapp (1937), 273 tons, 13·7 knots, 1 1·85-in.; Heimdal (1892), 660 tons, 12 knots, four 12-pr.

MINELAYERS.—Glommen and Laugen (1918), 335 tons, 9½ knots, 2 3-in. M., 50 mines; old gunboats, refitted as minelayers: Tyr, Gor, Vidar, Brage, Nor, Vale, and Uller, 230-280 tons, armed with one 4·7-in. and other guns. Albatros (*ex*-Olav Trygrason), minelayer and training ship, built at Horten, 1747 tons, 21½ knots, 6000 H.P., 4 4·7-in. and 1 3-in. A.A. guns, and 2 T.T.S. (18-in.), 280 mines.

MINESWEEPERS.—Rama and Otra (1940), 360 tons, 13·5 knots, 1 1·5-in., 2 M.

MOTOR TORPEDO BOATS.—*ex*-British. Number unknown.

CORVETTES, WHALERS, ETC.—*ex*-British. Number unknown.

* Under the control of Germany.

For Destroyers, Torpedo Boats and Submarines, see Flotilla Tables.

SOVIET UNION.—Battleships.

Class.	NAME	Normal Displacement.	Length. (Extreme).	Beam.	Draught.	Horse-Power.	Where Built.	Makers of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Fuel.		Complement.
												Belt.	Deck.	Side above Belt.	Bulkhead.	Heavy Guns.	Second-ary.	Guns.	Torpedo Tubes.		Coal.	Oil.		knots.	tons
b.	Parizhskaya Kommuna (ex-Sevastopol) †	23,000	594	87	27½	42,000 P.T.	(Baltic Works	Baltic Works	1911	1915	..	9-5	3	..	12-10	6	13 12-in., 16 4·7 in., 10 3-in. A.A., 8 M., and smaller, 2 seaplanes	4 (sub.) 18-in.	23	2000	1125		
b.	Oktyabrskaya Revolyutsiya (ex-Gangut) †	23,606	594	87	31																		
b.	Marat (ex-Petro-parlovsk) *	23,000	594	87	27½																1000		
b.	Mikhail Frunze																						
b. I.	· · ·																						
b. II.	· · ·	40,000	800	110	30				Blg.														
b. III.	· · ·																						

* Modernised 1931.

† Modernised, 1933.

† Modernised, 1937.

Seaplane Carrier.

Stalin (building), 12,000 tons, 30 knots, 22 aircraft.

SOVIET UNION.—Cruisers.

Class.	NAME.	Normal Displacement.	Length. (Extreme.)	Beam.	Draft.	Horse Power.	Where built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Fuel.	Complement.
											Belt, Deck.	Gun Position.	Guns.	Torpedo Tubes.			
cr.	Aurora†	tons. 6730	ft. 416	ft. 55	ft. 21	11,600	Petrograd	1900	1903	£ ..	in. ..	in. ..	10 5.1-in., 5 6-pr. A.A., 2 m., 125 mines	2	knots. 18	tons. 964	573
m. cr.	Marti.	3500	410	..	..	G. Tur.	..	..	1936	..	2	..	4 5.1-in., 3 3-in. A.A., 300 mines	..	25	..	..
cr.	Komintern†	6675	440	54½	20½	19,500	Nikolaev	1903	1907	..	..	..	10 5.1-in., 8 3-in. A.A., 1 aircraft	2	23	1190	595
"	Krasni Kavkaz (ex-Ad Lazarev)	7600	535	51½	19	60,000	Nikolaev	1916	1930	..	3	3	4 7.1-in., 4 3-in. A.A., 4 4-in. A.A., 4 m., 100 mines, 2 seaplanes	(sub.) (a.w.)	29½	540	650
"	Krasny Krym (ex-Profintern)	7200	520	50½	18½	35,000	Reval	1915	1925	..	3	3	15 5.1-in., 4 4-in. A.A., 4 3-in. A.A., 2 aircraft, 100 mines	12	29½	540	630
"	Kirov.	..	..	..	..	P.T.(Y.)	..	..	1937	..	1	..	..	..	..	..	..
"	Maxim Gorki	7725	613½	58	18	105,000	Leningrad	1936	1937	..	3	..	..	6	34	..	624
"	Ordzhonikidze	..	..	..	..	..	..	1937	1939	..	2	..	..	21-in.	..	..	..
"	Kuibishev	..	..	..	..	..	..	1938	1941	..	..	..	..	..	..	..	..
cr.	THREE IN NUMBER.	..	..	..	..	G. Tur.	..	1939	Bldg.	..	..	..	7 1-in. guns	..	..	..	..

GUNBOATS.—Krazni Vostok, Sun Yat Sen, Lenin, Chicherin, (1910), 950 tons, 11 knots, 1 6-in., 1 3-in.; Bednota, Krasnoe-Znamya, Rabochi, Proletarii, Krasni Buryat, Krasni Mongol, Krasni Moryak (1907), 11 knots, 190 tons, 2 4.7-in.; Krasni Azerbaidzhan, Lenin (1909), 640 tons, 12 knots, 2 4-in., 2 3-in.; Krasni Adzharistan, Krasni Krim, Krasnaya Gruzia, Krasnaya Abkhazia (1906), 1,100 tons, 9 knots, 2 5.1-in., fitted for minelaying; Altvater, Bakinsky Rabotchi, Markin (1905), 710 tons, 25 knots, 3 4-in., 2 m.; Krasnaya Zvezdo (1906), 1,300 tons.; Krasnoe Znamya (1895), 1,500 tons, 5.5-in., 2 3-in.; Karjala (1918), ex-Finnish, 350 tons, 14 knots, 2 3-in.; Yrjo and Annus (ex-Finnish).

MINELAYERS.—25 Oktyabrya (1873), 4,500 tons, 11 knots, 4 3-in., 600 mines; Sourup, Ristna (1905), 450 tons, 12 knots, 1 3-in.; Marti, 12 others. MINESWEEPERS.—Mikula, Iskra, 500 tons, 1 3-in.; Zapal, Zmei, Kluz (1911), 180 tons, 11 knots, 1 3-in.; Djalita (1926), 359 tons, 10 knots, 2 3-in.; Dorotea (1924), 443 tons, 10 knots, 2 3-in.; Udamnek (1917), 185 tons, 10 knots, 1 3-in.; Nos. I-VI (1935), 400 tons, 16 knots, 1 4-in., 1 m.g.; Lahna and Kuore (1937), ex-Finnish, 16 tons, 10 knots; Pugas, Kapsul Paravan, Podsekatez, Provodnik, Strela, Patron, and others (1933-40), 500 tons, 16 knots, 1 4-in., 1 1.7-in.

OILERS.—Gornjak (1898), 1,576 tons, 12 knots; Zheleznodorozhnik, 2,000 tons, 16 knots; 16 others. ICE-BREAKERS.—Josef Stalin, Kaganovitch, A. Mikoian (1938-40), 11,000 tons, 15 knots, 3 seaplanes.; Lenin, 5,700 tons, 19 knots; Krassin (1917), 10,000 tons, 15 knots; Sadko (1913), 1,616 tons, 14 knots.; Maligin (1912), 1,535 tons; Sedov, Rusanov, Sibiryakov (1909), 1,140 tons, 12 knots.; Truvor (1896), 1,450 tons, 13 knots; Davidov, 1,525 tons, 15 knots; Dobrynya Nikitich (1916), 1,664 tons; Feodor Litke (1909), 3,000 tons, 17 knots; V. Molotov (building); S. Makarov (1916), 4,000 tons, 14 knots; Yermak (1898), 8,000 tons, 14 knots; 30 others.

DEPOT SHIPS.—Krasni Gorn (1911), 1,892 tons, 11 knots; Serp-I-Molot (1900), 6,000 tons, 11 knots.; Smolni, 3,200 tons, 10 knots; Kommuna (1913), 2,400 tons, 10 knots; Sovetskaya Rossiya, 5,200 tons, 12 knots; Oka (1914), 1,982 tons, 10 knots. TRAINING SHIPS.—Svir, 10,000 tons gross, 15 knots; Martinov, Osevoakhim, Artemev, Kursant, Ucheba, Praktika (1907), 300 tons; Komsolets (1902), 11,000 tons, 18 knots, 4 3-in.; Amur, 3,000 tons, 13 knots, 1 4.7-in.; Leningrad Soviet (1895), 1,300 tons, 10 knots. GUARDSHIPS.—Razvedchik (1904), 100 tons, 16 knots, 2 3-pr.; Dzerzhinski, Kirov (1934), 800 tons, 20 knots, 2 4-in., 4 1.5-in. A.A.; Five vessels, 200 tons, 16 knots, 1 4.7-in. Eight vessels, 350 tons, 20 knots, 1 4.7-in.

WATERTANKERS.—Vodolez I and II, 660 tons, 9½ knots, 3 others. SURVEYING VESSELS.—Hydrografs (ex-Latvian), Okean, Okhotsh, Astronom, Zenit, Azimut and 24 others. PATROL VESSELS.—Khorek, Kunitsa, Laska, Vidra (1936-37), 180 tons, 12 knots, 2 3-in.; 40 others. 6 HOSPITAL SHIPS.

2 FISHERY PROTECTION VESSELS. For Flotilla Leaders, Destroyers, and Submarines, see Flotilla Tables.

5 SALVAGE VESSELS.

† Training ship.

SPAIN.

Class.	NAME.	Standard Displacement.	Length. (Extreme).	Beam.	Draught.	Horse-Power. Type of Machinery.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.	Speed.	Fuel.		Complement.					
											Side. Deck.	Gun Position.			Coal.	Oil.						
cr.	Canarias.	10,000	636	64	17-4	90,000 P.T.(G.) Y.	Ferrol .	1931	1934	£ ..	ins. 4 3	ins. 1	8 8-in., 8 4-7-in. A.A., 2 scaplanes; 1 catapult	4 21-in. (T.)	knots. 33-0	tons. 2750	765					
"	Miguel de Cervantes	7475	579½	54	16½	80,000 P.T.(G.) Y.	Ferrol .	1928	1930	..	3	..	8 6-in., 4 4-in. A.A., 2 3-pr., 1 M.	4 21-in. (T.)	33-0	—	560					
"	Almirante Cervera							1925	1928		1	3	..	4 3-5-in. A.A., 4 M., 1 L.	4 21-in. (T.)	25-5	1200	404				
"	Galicia, ex-Libertad (ex-Principe Alfonso)							1925	1927		3-1½ 1½	3	..	1920	1923	..	3	..	6 6-in., 4 1-9-in. A.A., 4 M.	4 21-in. (T.)	29	800 500	320
"	*Navarra, ex-Republica (ex-Reina Victoria Eugenia)	4857	462	50	15½	25,500 P.T.	Ferrol .	1922	1924	..	3 1	..	4 4-in., 2 1-9-in. A.A., 2 M	..	15	324	220					
"	Mendez Nuñez	4509	462	46	14½	45,000 (G.)	Ferrol .	1923	1925	..	..	..	4 4-7-in., 4 5-in. A.A. M.	..	20	..	140		
g.b.	Dato	1314	251½	33½	11½	1700 tur.	Ferrol .	1922	1924					
"	Canalejas							1922	1924			
"	Canovas Del Castillo							1922	1923
"	Calvo Sotelo	1600	282	39½	11	6500 tur.	Cadiz .	1934	1938	..	..	..	4 4-7-in., 4 5-in. A.A. M.	..	20	..	140		

* Training ship.

SAILING TRAINING SHIPS.—Juan Sebastian de Elcano (1928), 3500 tons, 800 H.P. (Diesel), 9-5 knots, 4 2-4-in.; Galatea (ex-Clarnastella) (1903), 2710 tons, 8½ knots, 4 2-4-in.

TRAINING SHIPS.—Virgen de La Caridad, Contramaestre Castello.

OILER.—Pluton, 7000 tons, 13 knots. Two building.

ARMED TRAWLERS.—Alcazar, Larache and Tetuan, 400 tons, 10 knots, 1 3-in. (also 2 3-pr. in Alcazar); Arcila, 510 tons, 10½ knots, 2 3-in.; Uad Martin, 420 tons, 10 knots, 1 3-in.; Uad Quert, Xauen, 660 tons, 10½ knots, 1 3-in.; Virgen de Begona.

FISHERY PROTECTION VESSELS.—8 in number, 150 tons, 11 knots, 4 4-7-in. A.A., 4 1-6-A.A., 4 M.C., 264 mines, 2 depth charge release gears; Eolo, Triton, 1700 tons, 18-5 knots, 4 4-in., 4 1-5-in., 4 M.C., 100 mines.

MINELAYERS.—Jupiter, Marte, Neptuneo, Vulcano, 2100 tons, 18½ knots, 1 6-pr.; R.R.11 (ex-Galicía), 350 tons, 10 knots, 1 3-in.; R.A.1 (ex-Cidlope), 800 tons, 12 knots, 1 3-in.

TUGS.—R.R.12 (ex-Cartagenero), Ferrolano, R.R.14 (ex-Gaditano), 300 tons, 10 knots, 1 6-pr.; R.R.11 (ex-Galicía), 350 tons, 10 knots, 1 3-in.; R.A.1 (ex-Cidlope), 800 tons, 12 knots, 1 3-in.

Three coastguard patrol vessels, 250 tons, ordered and four oilers building.

MOTOS TORPEDO BOATS.—Twenty in number.

For Destroyers, Torpedo Boats and Submarines, see Flotilla Tables.

M.A.S. BOATS.—Fourteen in number.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.				Armament.		Speed.	Fuel.	Complement.
		tons.	ft.	ft.	ft.					£	Belt.	Deck.	Slide above Belt.	Bulkhead.	Gun Position.	Guns.	knots.	Coal.	Oil.
c.d.s.	Two in number	8000	436	64	10½	..	..	Bldg.	..	..	in.	..	..	..	in.	4 10-in., 6 47-in., 8 15-in. A.A.	..	22	..
l.c.	Tre Krona	7000	..	..	..	..	..	Bldg.	..	..	..	..	..	..	..	..	..	..	590
"	Gota Leson	3361	287	49½	16.7	7000	Gothenburg	1901	1902	..	7	1½	..	..	5	2 8.3-in., 6 5.9-in., 10 6-pr., 1 1-pr.	2	17.2	300
"	Aran.	3361	287	49½	16.7	Y. t	Gothenburg	1901	1902	..	K.S.	..	..	..	K.S.	..	18-in. sub.	—	287
"	Drottning-Victoria*	7100	396.7	61	21½	22,000	Gothenburg	1917	1921	666,000	8-6	1½	4	..	8	4 11-in., 8 5.9-in., 4 3-in., 2 6-pr., 6 M.	2	23.0	690
l. cr.	Fylgia	4200	378	48.6	20.6	12,444	Stockholm	1905	1907	385,700	K.S.	2	H.S.	..	5	8 5.9-in., 4 2.2-in., 4 1.5-in.	2	22.7	900
"	Gotland	4700	442	50.6	14.7	89,000	Gothenburg	1933	1934	910,000 (estimated)	..	..	..	..	..	6 6-in., 4 3-in. A.A., 4 M., 100 mines, 11 seaplanes, 1 catapult, 100 mines	6	27.0	453
c.d.s.	Gustav V.*	7100	396.7	61	21½	22,000	Malmö	1918	1922	666,000	8-6	1½	4	..	8	4 11-in. 8 5.9-in., 4 3-in. A.A., 2 6-pr., 6 M.	—	23.0	690
"	Manligheten	3361	287	49½	17.4	7400	Malmö	1903	1904	..	7	1½	..	..	7½	2 8.3-in., 6 5.9-in., 8 6-pr., 1 1-pr.	2	17.0	300
"	Oscar II.*	4250	313.6	50.5	18	9000	Gothenburg	1905	1907	..	6	2	6	6	7½	2 8.3-in., 6 5.9-in., 8 6-pr., 1 1-pr.	2	18.0	330
"	Sverige*	6899	392.7	61	21½	20,000	Gothenburg	1915	1917	666,000	8-6	1½	4	..	8	4 11-in., 8 5.9-in., 4 3-in., 2 6-pr., 6 M.	—	22.5	690
"	Tapperheten	3361	287	49½	17.7	6000	Malmö	1901	1903	..	7	1½	..	..	7½	2 8.3-in., 6 5.9-in., 10 6-pr., 1 1-pr.	2	16.5	287

MINELAYER.—Clas Fleming, 1570 tons, 4 4.7-in., 4 M., 20 knots, 200 mines. ICEBREAKERS.—Atle, 1720 tons, 16 knots, 2 2.2-in.; Ymer, 3450 tons, 18 knots, 4 3-in. Three building. AIRCRAFT DEPOT SHIP.—Dristigheten (1901), 3218 tons, 16 knots, 4 3-in., 3 aircraft. DEPOT SHIPS.—Niord (1898), 3297 tons; Göta, 3350 tons. Jacob Bagge, Örnen 738 tons, 20 knots, 2 4.7-in., 2 2.2-in. SAILING TRAINING SHIPS.—Af Chapman (1888), Falken (1877), Najaden and Jarramas (1900), 350 tons. VEDETTE BOATS (used for minelaying and minesweeping).—Kaparen, Jagaren, Snapphanen, Vaktaren, 290 tons, 24 knots, 2 3-in., 2 1-in. A.A. Altair, Argo, Astrea, Antares, Artcurus, Iris, Perseus, Polaris, Regulus, Rigel, Spica, Thetis, Vega, Vesta (1908-11), 105 tons, 20 knots, 2 2.2-in., 1 18-in. T.T.; Castor, Pollux (1909), 105 tons, 20 knots, 2 1.5-in., 1 18-in. T.T.; No. 27, 28, 30, 33, 34, 35, 36 (1900), 50 tons, 17 knots, 2 1.5-in. T.T., 1 15-in. T.T., 1 15-in. T.T., 50 tons, 11 knots, 1 1.5-in., 1 18-in. T.T. SALVAGE VESSEL.—Belos.

MOTOR TORPEDO BOATS.—Nos. 3 and 4, 55 ft., 11 tons, 900 H.P., 41 knots, 1 M., 2 18-in. T.T. MINESWEEPERS.—Starkodder, Styrbjörn, 350 tons, 15 knots, 2 1.5-in.; M. 1 and 2, 60 tons, 16½ knots, 2 M.G.; Holmon, Vingå, Ven, Ramskar, Kullen, Artholma, Landsort (1939-40), 370 tons, 17½ knots, 2 3-in. 1 M.G. BREMON, Holmon, Gronska, Koster, Kullen, Ven, Vingå, Ulvön (1941), 17 knots, 2 4.3-in., 1 1-in. A.A. SUBVING VESSELS.—Gustaf Af Flint, Compass, Johan Nordenfjær, Peter Gedda, Ejdern, Falken, Svalen. OILERS.—Brannaren (1933), 1,082 tons 10 knots. Olsaren and Eldaren. For Destroyers and Submarines, see Page 239. * Reconstructed and modernised (1929-39).

UNITED STATES.—Battleships

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Class.	NAME	Standard Displacement.	Length. (Extreme).	Beam.	Draught.	Horse-Power. Type of Machinery.	Where Built.	Date of Launch.	Cost. \$	Armour.					Armament.		Speed.	Fuel.	Complement.
		tons.	ft.	ft.	ft.				£	Belt.	Deck.	Slide above Belt.	Bulkhead.	Heavy Guns.	Second ary.	Guns.	knots.	tons.	
b.	Montana.	58,000	Philadelphia	Big.	16-in. guns.
b.	Ohio.						Philadelphia	Big.											
b.	Maine.						(Navy Yard)	Big.											
b.	New Hampshire						(Navy Yard)	Big.											
b.	Louisiana	45,000	880	108	36	C.T. (G.)	Norfolk	Big.	100,000,000	9 16-in. guns, 20 5-in.	..	30	..
b.	Illinois.						(Navy Yard)	Big.											
b.	Kentucky						Philadelphia	Big.											
b.	Iowa.						Norfolk	Big.											
b.	New Jersey						(Navy Yard)	1942											
b.	Missouri						Philadelphia	1942											
b.	Wisconsin	35,000	750	108	28	115,000 tur.	(Navy Yard)	Big.	17,500,000	9 16-in. guns, 20 5-in., 16 smaller, 3 aircraft, 2 catapults	..	30	..
b.	Washington						Philadelphia	1940											
b.	North Carolina						(Navy Yard)	1940											
b.	Indiana						(Navy Yard)	1941											
b.	Massachusetts						Newport	1941											
b.	Alabama						Bethlehem (S.B. Co.)	1942											
b.	South Dakota	26,100	562	106	26	30,000 P. tur.	(Navy Yard)	1941											
b.	Arkansas *						(S.B. Co.)	1941											
b.	Arkansas *	26,100	562	106	26	30,000 P. tur.	New York (S.B. Co.)	1911	964,000	11-5 K.S.	3	..	8-6 K.S.	11 K.S.	6½	12 12-in. (50 cal.), 16 5-in. (51 cal.), 8 3-in. (50 cal.) A.A., 2 3-pr., 8 m., 1 catapult, 3 float-planes	20.5	5100	670

b. California	32,600,624	97½	30½	26,800 tur. electric drive	Mare Island (Navy Yard)	1919|1921	2,620,000	14-8	3	..	..	18 K.S.	..	12 14-in. (50 cal.), 12 5-in. (51 cal.), 8 5-in. (25 cal.) A.A., 2 6-pr., 8 M., 2 catapults, 3 floatplanes	21	4656|1230
b. Colorado	32,500,624	97½	30½	27,300 B. & W. tur. electric drive	New York (S.B. Co.)	1921|1923	1,383,000	13½-12 K.S.	..	..	..	18 K.S.	..	8 16-in. (45 cal.), 12 5-in. (51 cal.), 8 5-in. (25 cal.) A.A., 2 6-pr., 2 1-pr., 8 M., 2 catapults, 3 floatplanes	21 0	4570|1230
b. Idaho †	33,400,624	106½	29½	40,000 B. & W. P.T.	New York (S.B. Co.)	1917|1919	1,485,000	14 K.S.	3	..	..	18 K.S.	..	12 14-in. (50 cal.), 12 5-in. (51 cal.), 8 5-in. A.A., 2 8-pr., 8 M., 2 L., 2 catapults, 3 floatplanes	21½	3271|1130
b. Maryland	31,500,624	97½	29½	27,300 B. & W. tur. (G.) and electric drive	Newport News	1920|1921	1,383,000	13½-12 K.S.	..	..	..	18 K.S.	..	8 16-in. (45 cal.), 12 5-in. (51 cal.), 8 5-in. (25 cal.) A.A., 2 6-pr., 8 M., 2 catapults, 3 floatplanes	21	4570|1230
b. Mississippi †	33,000,624	106½	29½	40,000 B. & W. C.T. (G.)	Newport News	1917|1917	1,485,000	14 K.S.	3	..	..	18 K.S.	..	12 14-in. (50 cal.), 12 5-in. (51 cal.), 8 5-in. A.A., 2 6-pr., 8 M., 2 catapults, 3 floatplanes	21	3271|1130

* Modernized 1926. Used as training ship.

† Modernized, 1934.

§ The sums given in this column are exclusive of the cost of armour and armament according to the system of making appropriations in the estimates.

UNITED STATES.—Battleships—continued.

Class.	NAME.	Standard Displacement.	Length. (Extreme).	Beam.	Draught.	Horse Power.	Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.					Armament.		Speed.	Fuel.	Complement.	
												Belt.	Deck.	Side above Belt.	Bulkhead.	Heavy Guns.	Second-ary.	Guns.				Torpedo Tubes.
b.	Nevada §.	29,000	583	108	27½	25,000	Y. P. tur.	Quincy, Mass. (Fore River)	1914	1916	1,211,342	13½-8 K.S.	14-8	..	13½ K.S.	18-16	..	10 14-in. (45 cal.), 12 5-in. (51 cal.), 8 5-in. (25 cal.) A.A., 2 6-pr., 8 M., 2 L., 2 catapults, 3 floatplanes	—	20·5	2000	1100
b.	New Mexico †	33,400	624	106½	29½	40,000	B. & W. Electric drive	New York (Navy Yard)	1917	1918	1,485,000	14 K.S.	3	..	..	18 K.S.	..	12 14-in. (50 cal.), 12 5-in. (51 cal.), 8 5-in. A.A., 2 6-pr., 8 M., 2 catapults, 3 floatplanes	—	21·5	3271	1140
b.	New York *	27,000	573	106	26	28,100	B. & W. recip.	New York (Navy Yard)	1912	1914	1,315,114	12-4 K.S.	3	9 K.S.	10 K.S.	14-8 K.S.	6 K.S.	10 14-in. (45 cal.), 16 5-in. (51 cal.), 8 3-in. (50 cal.) A.A., 2 8-pr., 8 M., 1 catapult, 3 floatplanes	—	21·0	5200	1230
b.	Oklahoma §	29,000	583	108	28½	25,300	B. & W. recip.	New York (S.B. Co.)	1914	1916	2,200,000	13½-8 K.S.	14-8	..	13½ K.S.	18-16	..	10 14-in. (45 cal.), 12 5-in. (51 cal.), 8 5-in. (25 cal.) A.A., 2 8-pr., 8 M., 2 catapults, 3 floatplanes	—	20·5	2000	1130
b.	Pennsylvania †	33,100	608	106½	28	40,000	B. & W. Cur. tur.	Newport News	1915	1916	1,485,000	14 K.S.	3	..	..	18 K.S.	..	12 14-in. (45 cal.), 12 5-in. (51 cal.), 8 5-in. (25 cal.) A.A., 2 8-pr., 8 M., 2 catapults, 3 floatplanes	—	21·0	2300	1130

b.	Tennessee .	32,300	624	97½	30½	26,800 B. & W. Tur. electric drive,	New York (Navy Yard)	1919 1920	2,650,000	14-8 K.S.	3	..	18 K.S.	..	12 14-in. (50 cal.), 12 5-in. (51 cal.), 8 5-in. (25 cal.) A.A., 2 6-pr., 2 1-pr., 8 M., 2 catapults, 3 21-in. floatplanes	2 (sub.) 21-in.	21-0	4656	1230
b.	Texas*	27,000	573	106	26	28,100 recip.	Newport News	1912 1914	1,166,000	12-4 K.S.	3	9 K.S.	14-8 K.S.	10 K.S.	10 14-in. (45 cal.), 16 5-in. (51 cal.), 8 3-in. (50 cal.) A.A., 2 3-pr., 8 M., 1 catapult, 3 float- planes	—	21-0	5200	670
b.	West Virginia	31,800	624	97½	30	27,300 B. & W. tur. electric drive,	Newport News	1921 1923	1,383,000	13½-1 K.S.	18 K.S.	..	8 16-in. (45 cal.), 12 5-in. (51 cal.), 8 5-in. (25 cal.) A.A., 2 (sub.) 6-pr., 2 1-pr., 8 M., 2 catapults, 3 floatplanes	2 (sub.) 21-in.	21-0	4570	1230
b.c.	Alaska	27,000	tur.	New York S.B. Co.	Blg.	35
"	Guam																		
"	Hawaii																		
"	Philippines																		
"	Puerto Rico																		
"	Samoa																		

The battleship Wyoming was converted to a training ship (speed 18 knots) in 1931 in accordance with London Naval Treaty.

* Modernised in 1927. Modernisation included fitting of bulge protection, protection of decks against aerial attack, conversion to oil burning, installation of 3-in. A.A. battery, and addition of catapults. Cost about £600,000 each ship. Displacement increased about 3000 tons.

† Modernised in 1931. Modernisation included fitting bulges, reboiling, increasing elevation of turret guns, replacing former anti-aircraft batteries by 5-inch A.A. guns, new masts and new fire control.

‡ Taken in hand for modernisation 1931. New Mexico and Mississippi completed 1933. Idaho completed 1934. Modernisation includes fitting, increased deck protection, increasing elevation of turret guns, installation of eight 5-in. A.A. guns, reboiling, fitting of new turbines (the electric drive in New Mexico has been replaced by turbine machinery), alterations to masts and bridges, and fitting of bulges.

§ Modernisation in 1929. Alterations include fitting of bulges, deck protection, tripod masts, increasing elevation of turret guns, fitting a new 5-in. anti-aircraft battery.

Oklahoma capsized during Japanese attack on Pearl Harbour, 7th Dec. 1941; reported to be repairable.

The modernisation of California,

West Virginia, Colorado, Maryland, and Tennessee is projected.

UNITED STATES.—Aircraft Carriers.

Class.	NAME.	Displacement. tons.	Length. (Extreme.) ft.	Beam. ft.	Draught. ft.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost. £	Armour.		Armament.		Speed. knots.	Fuel. Oil. tons.	Complement.
											Deck.	Belt.	Guns.	Torped. Tubes.			
A.C.	Randolph .	..	..	..	..	..	Newport News { S. B. Co.	Bldg.	..	..	..	..	..	..	..	..	..
A.C.	Essex .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
A.C.	Bon Homme Richard .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
A.C.	Intrepid .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
A.C.	Kearsage .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
A.C.	Franklin .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
A.C.	Hancock .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
A.C.	Lexington (ex- Cabot	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
A.C.	Bunker Hill	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
A.C.	Oriakany .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
A.C.	Ticonderoga	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
A.C.	Hornet .	19,800	802	83	21½	120,000 (G.) B. & W.	Newport News	1936	..	..	..	..	8 5-in. A.A. guns, 16 1.1-in. M. A.A., 76 aircraft. 1 catapult	—	34	1200	..
A.C.	Enterprise	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
A.C.	Ranger .	14,500	769	80	19½	53,500 (G.) S. B. Co.	Newport News	1933	1934	about 4,000,000	..	..	8 5-in. A.A., 50 M.G., 76 aircraft	—	29½	1434	..
A.C.	Saratoga .	33,000	885	105½	31	180,000 tur.electric (W. F.)	N.Y. Ship- building Co.	1925	1927	9,000,000	3	4	8 8-in. (55 cal.), 12 5-in. (25-cal.) A.A. 12 M.G.; 2 6-pr. Operates about 80 landplanes. 1 catapult	—	33.9	7100	1927
A.C.	Langley †.	11,500	542	65½	19	7,200 tur.electric	Mare Island Navy Yard	1912	1922	..	3	..	4 5-in. (51 cal.), operates 7 land- planes	—	15	2000	411
A.C.*	Long Island	..	..	..	..	D.	..	..	..	..	..	..	..	..	..	..	..
A.C.*	Independence	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
A.C.*	Belleau Wood	10,000	..	..	..	..	..	1942	Bldg.	..	..	..	..	..	..	..	..
A.C.*	And 1 other.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
A.C.*	4 others .	10,000	..	..	..	..	..	Bldg.	..	..	..	..	..	..	..	..	..

* Laid down as cruisers.

† Formerly Collier Jupiter, converted 1937 into aircraft tender.

UNITED STATES.—Cruisers

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draft.	Horse-Power.	Type of Machinery and Boilers.	Where Built	Date of Launch.	Date of Completion.	Cost (exclusive of armament).	Armour.		Armament.		Speed.	Fuel.	Complement.
												Belt. (in.)	Position. (in)	Guns.	Torpedo Tubes.			
	Baltimore	13,000	ft.	ft.	ft.	tur. (G.)	Bethlehem, Fore River	1942	9 8-in., 12 5-in.	tons.	..
	Boston																	
	Pittsburgh																	
	St. Paul																	
	Albany																	
	Rochester	10,000	600	tur. (G.)	New York, S. Co., Camden	Bldg.	12 6-in., 12 5-in., 4 air-craft.	..	32½
	Columbus																	
	Des Moines																	
	And others																	
	Cleveland																	
	Columbia	Newport News S. B. Co.	Bldg.	12 6-in.
	Montpelier																	
	Denver																	
	Amsterdam																	
	Santa Fé																	
	Tallahassee	Bethlehem, Fore River	Bldg.	12 6-in.
	Birmingham																	
	Mobile																	
	Biloxi																	
	Vicksburg																	
	Flint	12 6-in.
	Pasadena																	
	Springfield																	
	Topeka																	
	Providence																	
	Manchester																	

UNITED STATES.—Cruisers.—Continued.

Class.	NAME.	Standard displacement.	Length. (Extreme).	Beam.	Draft.	Horse-Power. Type of Machinery and Boilers.	Where built.	Date of Launch.	Date of Completion.	Cost (exclusive of armament).	Armour.		Armament.		Speed. knots.	Fuel. Oil.	Complement.
											Belt. Deck.	Gun Position.	Guns.	Torpedo Tubes.			
	Cheyenne Duluth	..	ft.	ft.	ft.	..	Federal, S. B. Co.	1942	Bldg.	£ ..	ins. ..	ins. ..	12 6-in.	..	..	tons. ..	..
	Miami Wilkes-Barre Oklahoma City Little Rock Galveston Youngstown	..	..	..	..	..	Cramp, S. B. & Co.	Bldg.	..	..	..	..	12 6-in.	..	..	..	..
	Phoenix	..	..	..	..	..	N. Y. S. Co., Camden	1938	..	2,395,000	..	..	15 6-in., 8 5-in., 10 m., 4 seaplanes, 2 catapults	..	32½	2100	630
	Boise	10,000 esti- mated	600 (on w. l.)	61	19	100,000 (G.)	Newport News	1936	1938	2,330,000	5 3	..	..	..	..	..	..
	Honolulu	..	..	..	..	..	N. Y.	1937	..	..	..	..	..	..	..	..	..
	. Louis	..	..	..	..	..	Navy Yard Newport News	1938	1939	..	..	..	..	..	..	..	..
	Helena	..	..	..	..	..	N. Y. Navy Yard	1938	..	..	..	..	..	..	..	..	..
	Atlanta Juneau San Diego San Juan Oakland Reid Spokane Tucson	6,000	530 (on w. l.)	52½	16½	75,000 (G.)	Federal, S. B. Kearney Bethlehem Quincy Bethlehem, San Francisco	1941 1941 1941 1941 1942	1942 1942 1942 1942 Bldg. Bldg. Bldg.	..	..	..	12 5-in. guns	6 21-in	33	Oil	..

Wichita Class	Wichita	10,000	600 (on w. l.)	61½	19½	100,000 (G.)	Philadelphia Navy Yard	1937	1939	..	..	9 8-in., 8 5-in. A.A., 2 3-pr., 10 smaller, 2 catapults, 4 aircraft	None	32½	1650	630				
Brooklyn Class	Savannah	10,000	600 (on w. l.)	61½	19½	95,000 (G.)	N. Y. S. Co., Camden	1937	1938	2,410,000 estimated	5 3	15 6-in., 8 5-in. A.A., 10 m., 4 seaplanes, 2 catapults	None	32½	Oil	630						
	Nashville						N. Y. S. Co., Camden	1937	1938													
	Brooklyn						New York Navy Yard	1937	1938													
	Philadelphia						Philadelphia Navy Yard	1937	1938													
Astoria Class	Tuscaloosa	9950	538	61½	19½	107,000 W. G. T. (Tuscaloosa) P. T. (G.)	New York, S. B. Co.	1933	1934	2,090,000 estimated 2,460,000 2,460,000	5 3	9 8-in. (55 cal.), 8 5-in. (25 cal.) A.A., 2 3-pr., and 10 smaller, 2 catapults, 4-6 aircraft, 50 mines	None	32.7	Oil	620						
	San Francisco						Mare Island Navy Yard															
	New Orleans						New York Navy Yard															
	Minneapolis						Philadelphia Navy Yard															
Portland Class	Portland	9800	610½	66	17½	107,000 P. T. (G.)	Bethlehem S. B. Co.	1932	1933	2,210,000	4 2	9 8-in. (55 cal.), 8 5-in. (25 cal.) A.A., 2 3-pr., and 10 smaller, 2 catapults, 4-6 aircraft	6 21-in.	32.7	Oil	620						
	Indianapolis						Quincy New York S. B. Co.	1931	1932								2,250,000					
Chester Class	Northampton	9050	610½	66	16-3-17-6	107,000 P. T. (G.)	Bethlehem S. B. Corp., Quincy	1929	1930	2,180,000	8 2	9 8-in. (55 cal.), 4 5-in. (25 cal.) A.A., 2 3-pr., 8 m., 2 catapults, 4-6 seaplanes	6 21-in. (T)	32½	1500	611						
	Chester						American Brown Boveri Elec. Corp.	1929	1930								2,250,000					
	Louisville						Puget Sound Navy Yard	1930	1931								2,290,000					

UNITED STATES.—Cruisers.—Continued.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost (exclusive of armament).	Armour.	Armament.	Speed.	Fuel.	Complement.
Augusta Class	Chicago	9300 tons.	600½ ft.	66 ft.	16-3½ ft.	107,000 P.T. (G.)	Mare Island Navy Yard	1930	1931	£ 2,280,000	in. 3	9 8-in. (55 cal.), 4 5-in. (25 cal.) A.A., 2 3-pr., 8 m., 2 catapulta, 4-6 seaplanes.	6 knots. 32½	1500 tons.	511
	Augusta	9050	600½	66	16-3½ ft.	107,000 P.T. (G.)	Newport News S. B. & D. D. Co.	1930	1931	2,170,000	in. 2	12 8-in. (53 cal.) (Cincinnati and Detroit, 10 6-in. (48 cal.) A.A., 2 3-pr., 2 catapulta, 2 aircraft, 30 mines	6 21-in. (T.)	1800	450
Omaha Class	Cincinnati	7050	555½	55½	13½	90,000 P.T. (G.)	Tacoma, Wash.	1921	1824	1,730,000	in. 8	10 6-in. (53 cal.) (Marblehead, 11 8-in. (50 cal.) A.A., 2 3-pr., 2 catapulta, 2 floatplanes, 30 mines	6 21-in. (T.)	1800	450
	Concord	7050	555½	55½	13½	90,000 P.T. (G.)	Philadelphia (Cramp)	1921	1824	1,742,000	in. 1½	10 6-in. (53 cal.) (Omaha, 12 6-in. (50 cal.) A.A., 2 3-pr., 2 catapulta, 2 floatplanes, 30 mines	6 21-in. (T.)	1800	450
	Detroit	7050	555½	55½	13½	90,000 C.T. (G.)	Bethlehem S. B. Co. Quincy	1922	1923	1,584,000	in. 3	10 6-in. (53 cal.) (Omaha, 12 6-in. (50 cal.) A.A., 2 3-pr., 2 catapulta, 2 floatplanes, 30 mines	6 21-in. (T.)	1800	450
	Trenton	7050	555½	55½	13½	90,000 P.T. (G.)	Philadelphia (Cramp)	1923	1924	1,823,000	in. 1½	10 6-in. (53 cal.) (Omaha, 12 6-in. (50 cal.) A.A., 2 3-pr., 2 catapulta, 2 floatplanes, 30 mines	6 21-in. (T.)	1800	450
	Marblehead	7050	555½	55½	13½	90,000 P.T. (G.)	Philadelphia (Cramp)	1923	1924	1,810,000	in. 8	10 6-in. (53 cal.) (Omaha, 12 6-in. (50 cal.) A.A., 2 3-pr., 2 catapulta, 2 floatplanes, 30 mines	6 21-in. (T.)	1800	450
	Memphis	7050	555½	55½	13½	90,000 P.T. (G.)	Tacoma, Wash.	1924	1925	1,838,000	in. 1½	10 6-in. (53 cal.) (Omaha, 12 6-in. (50 cal.) A.A., 2 3-pr., 2 catapulta, 2 floatplanes, 30 mines	6 21-in. (T.)	1800	450
	Milwaukee	7050	555½	55½	13½	90,000 P.T. (G.)	Philadelphia (Cramp)	1921	1923	1,794,000	in. 3	10 6-in. (53 cal.) (Omaha, 12 6-in. (50 cal.) A.A., 2 3-pr., 2 catapulta, 2 floatplanes, 30 mines	6 21-in. (T.)	1800	450
Pensacola Class	Omaha	7050	555½	55½	13½	90,000 P.T. (G.)	Tacoma, Wash.	1920	1928	1,823,000	in. 3	10 6-in. (53 cal.) (Omaha, 12 6-in. (50 cal.) A.A., 2 3-pr., 2 catapulta, 2 floatplanes, 30 mines	6 21-in. (T.)	1800	450
	Baleigh	7050	555½	55½	13½	90,000 P.T. (G.)	Bethlehem S. B. Co., Quincy	1928	1924	1,616,000	in. 1½	10 6-in. (53 cal.) (Omaha, 12 6-in. (50 cal.) A.A., 2 3-pr., 2 catapulta, 2 floatplanes, 30 mines	6 21-in. (T.)	1800	450
	Richmond	7050	555½	55½	13½	90,000 C.T. (G.)	Philadelphia (Cramp)	1921	1928	1,742,000	in. 3	10 6-in. (53 cal.) (Omaha, 12 6-in. (50 cal.) A.A., 2 3-pr., 2 catapulta, 2 floatplanes, 30 mines	6 21-in. (T.)	1800	450
Pensacola Class	Salt Lake City	9100	585½	65½	16	107,000 P.T. (G.)	New York S. B. Co.	1929	1929	3,400,000	in. 3	10 8-in. (55 cal.), 4 5-in. (25 cal.) A.A., 2 3-pr., 8 m., 2 catapulta, 4 planes	6 21-in. (T.)	3000	603
	Pensacola	9100	585½	65½	16	107,000 P.T. (G.)	Navy Yard, New York	1929	1930	3,400,000	in. 1½	10 8-in. (55 cal.), 4 5-in. (25 cal.) A.A., 2 3-pr., 8 m., 2 catapulta, 4 planes	6 21-in. (T.)	3000	603

GUNBOATS.—Tulsa (1923), and Asheville (1920), 12 knots, 3 4-in., 23-pr., 3 1-pr.; Sacramento (1914); 1,140 tons, 12½ knots, 3 4-in., 23-pr., 2 1-pr.; Charleston, and Erie (1936), 2,000 tons, 20 knots, 4 6-in., 4 m.g., 1 seaplane; Dubuque and Paducah (1905), 1,000 tons, 13 knots, 4 4-in., 1 3-in.; Niagara, Vixen, St. Augustine, James-River, ex-Merchant Ships. A number similar to British "Flower" Class Corvettes.

RIVER GUNBOATS.—Wake (ex-Guam) (1927); Tutuila (1928), 370 tons, 14 knots, 2 3-in., 10 m.; Monocacy (1914), 180 tons, 13½ knots, 2 3-in., 7 m.; Luzon, Mindanao (1928), 560 tons, 16 knots, 2 3-in., 10 m.; Oahu (1928), 450 tons, 15 knots, 2 3-in., 10 m.

MINELAYERS.—Aroostook (1918), 4,200 tons, 20 knots, 1 5-in., 2 3-in. A.A., 350 mines; 8 light mine-layers, ex-T.B.D.s, 1,160-1,190 tons, 35 knots, 4 4-in., 1 3-in. A.A., 80 mines. Terror, 6,000 tons (building), 5-in. guns; Catskill and Ozark (building). A number of Converted Merchant Ships.

MINESWEEPERS.—26 in number. "Bird" class (1918, 1919), 840 tons, 1,400 H.P., 14 knots, 2 3-in. A.A. guns authorised but not carried. Raven, Osprey, Auk, and 8 others, 600 tons (1941-42); 200 building; 100 converted trawlers.

SEAPLANE TENDERS.—Albemarle, Curtiss (1940); Curruck, Norton Sound, Pine Island, Puget Sound (Building), 8,300 tons, 18 knots, 2 5-in., 2 3-in., 24 seaplanes; Barnegat, Biscayne (1941), Casco, Mackinac, Humboldt, Matagorda, Abasco, Chincoteague, Coos Bay, Half Moon, Mobsack, Oyster Bay, Rockaway, San Pablo, Unimak, Yakutat (building), 1,650 tons, 20 knots, 2 5-in.; Langley (1912), 11,050 tons, 15 knots, 4 6-in., 4 5-in.; Wright (1921), 8,675 tons, 15 knots, 2 5-in., 2 3-in.; a number of converted Merchant ships, 8,000 tons gross; 14 converted Destroyers: Sandpiper, Gannet, Thrush, Swan, Heron, Pelican, Avocet, Teal, Lapwing (1918-1919), 840 tons, 14 knots, 2 3-in. Coast GUARD CRUISING CUTTERS.—7 in number, 2,000 tons, 20 knots, 2 5-in., 2 6-pr., 1 seaplane; 6 in number, 1,000 tons, 13½ knots, 2 3-in.; 10 in number, 1,500 tons, 16½ knots, 1 5-in., 1 3-in.; 4 in number, 1,800 tons, 15 knots, 2 5-in., 1 3-in.; 9 others, 800-1,200 tons, 12 knots, 2 3-in.

COAST GUARD PATROL BOATS.—19 in number, 311 tons, 16 knots, 1 3-in., 2 6-pr.; 36 in number, 200 tons, 10 knots, 1 3-in.; 15 in number, 45 tons, 22 knots; 58 in number, 37 tons, 13½ knots, 1 1-pr.; 20 motor boats, 20 tons.

MOTOR TORPEDO BOATS.—P1-4, 59 feet long, 40 knots, 2,400 H.P.; P5-8, 81 feet long, 40 knots, 3,600 H.P.; P9 and 22 others, 70 feet long, 43 knots, 3,600 H.P., 4 T.T., 4 5 m.g.; P.T. 20 and others, 77 feet, 4 5 m.g., 4 T.T.; P.I. 103 and others, 80 feet, 1 75-in. m.g., 4 5-in. m.g., 2 T.T.

SUBMARINE CHASERS.—P.C. 449, 450, 110 feet long, 22 knots, 1 3-in.; P.C. 451, 170 feet long, 22 knots, 1 3-in.; 13 in number (1918-21), 75 tons, 17 knots, 1 3-in.; P.T.C. 1-12 (1941) and P.T.C. 13-36 (building), have wood hulls. A number of converted Yachts.

OILERS.—Cimarron, Neosho, Platte (1939), 16,000 tons, 16½ knots, 4 5-in.; Brazos, Neches, Pecos (1920), 5,400 tons, 14 knots, 4 5-in., 2 3-in.; Patoka, Ramapo, Sapelo, Trinity, Sepulga, Salinas, Tippecanoe, Rapidan (1920), 5,375 tons, 10½ knots; Maumee, Guyama, Kanawha (1915), 4,990 tons, 14 knots, 4 5-in., 4 4-in.; Laramie, Kaweah, Mattole (1920), 4,410 tons, 11 knots, 2 5-in., 2 3-in.; Robert L. Barnes (1917), 1,630 tons, 8½ knots; Sabine, Salamonie, Kaskaskia, Sangamon, Chemung, Chenango, Guadalupe, Santee, Suwannee, and others. COLLIERIES.—Nereus, Proteus (1913), 6,275 tons, 14 knots.

DESTROYER TENDERS.—Dobbin (8,325 tons), 13 knots, 8 5-in.; Whitney (6,325 tons), and Melville (5,250 tons), 16 knots, 8 5-in., 4 3-in.; Altair, Denebola and Rigel, 6,250 tons, 10½ knots, 8 5-in., 4 3-in. A.A.; Black Hawk, 5,600 tons, 13 knots, 4 5-in.; Bridgeport, 7,125 tons, 12½ knots, 8 5-in.; Dixie, Prairie, 9,000 tons, 16½ knots; Piedmont, Sierra, Yosemite and Cascade, building.

SUBMARINE TENDERS.—Holland (1926), 8,100 tons, 16 knots, 8 5-in., 4 3-in. A.A., 2 6-pr.; Canopus (1919), 5,975 tons, 13 knots, 2 5-in., 4 3-in. A.A.; Camden (1900), 6,075 tons, 12 knots, 4 4-in., 2 3-pr.; Beaver (1910), 4,670 tons, 16½ knots, 4 5-in., 2 1-pr.; Argonne (1921), 8,400 tons, 15½ knots, 2 6-pr.; Fulton, Sperry (building), 9,000 tons, 16 knots; Griffin, 16½ knots; Seagull (1919), 840 tons, 14 knots, 2 3-in.; Otus, Pelias, Anteus, ex-Merchant Vessels.

REPAIR SHIPS.—Medusa (1924), 8,125 tons, 16 knots, 4 5-in., 2 3-in. A.A., 2 6-pr.; Vestal, Prometheus (1909), 6,625 tons, 16 knots, 4 5-in., 1 3-in.; Vulcan, 9,500 tons (1941).

TRAINING SHIP.—Wyoming (1912), 26,000 tons, 18 knots, 6 12-in., 16 5-in., 8 3-in.; Wheeling, 870 tons, 13 knots, 1 4-in.; Wilmington, 1,280 tons, 15 knots, 8 4-in.

5 Store ships, 50 Cargo ships, 9 Patrol vessels (Eagle class, 430 tons, 18 knots, 2 4-in., 1 3-in. A.A.), 35 tugs, 10 cable ships, 7 Auxiliaries, 20 Yachts, 48 Net Tenders.

HOSPITAL SHIPS.—Solace (ex-Iroquois), 1927, 6,200 tons gross, 19 knots, 400 beds; Relief (1920), 7,275 tons, 15 knots, 535 Beds.

SURVEY VESSELS.—Sumner (1915), 2,900 tons, 14 knots, 4 5-in., 2 3-pr.; Bowditch (1929), Hannibal, Andradite.

SUBMARINE RESCUE VESSELS.—Ortolan, Falcon, Pigeon, Widgion, Chewink (1918-19), 1,060 tons, 14 knots.

TRANSFERTS.—Wakefield (ex-Manhattan), 24,000 tons. A number of other converted liners.

For Destroyers and Submarines, see Flotilla Tables.

SHIPS OF THE LESSER NAVIES.

BELGIUM.

CORVETTE.—1 in number (ex-British).

BULGARIA.

MOTOR TORPEDO BOATS.—2 in number (Lurssen, 1939), 60 tons, 30 knots, 1 m.a.a., 2 21-in. torpedo tubes.

PATROL VESSELS.—**Derzki**, **Khrabri**, **Letoutschy**, **Shumni**, **Smeli**, and **Strogi** (ex-French, 1907–08), 97 tons, 17 knots, 2 1·85-in., 1 m., 2 18-in. torpedo tubes.

MINESWEEPERS.—2 in number (ex-French, 1918), 350 tons, 17 knots.

TRAINING SHIPS.—**Tsar Assen** (ex-Dutch, 1912), 240 tons, 9 knots, 2 2·6-in., 1 m.; **Kamcia** (1898), 10 knots; **Simeon**, 600 tons, 2 3-in., 4 1·5-in.

MOTOR BOATS.—**Vzrif** and **Capitan Minkoff** (ex-French, 1918), 40 tons, 14 knots, 2 m.; **Belmoretz** and **Chernomoretz** (ex-French, 1918), 77 tons, 17 knots, 1 1·85-in., 2 m.

CHINA.

GUNBOATS.—**Chang Ning**, **Cheng Ning**, **Wu Ning**, **Sui Ning**, **Wei Ning**, and **Su Ning** (Shanghai, 1933–34), 300 tons, 11 knots, 2 2·25-in., 3 m.; **Min Chuan** (Shanghai, 1931), 460 tons, 16 knots, 1 4·7-in., 1 4-in., 1 3-in., 2 2·24-in.; **Chu Chien** (Kobe, 1906); **Chu Kuan** and **Chu Tung** (Kobe, 1907), 11 knots, 1 3-in.; **Yung Sui** (Shanghai, 1929), 600 tons, 18 knots, 1 6-in., 1 4·7-in., 3 3-in., 2 2·24-in., 2 1·5-in. a.a., 4 m.; **Tutuila** (Shanghai, 1928), 370 tons, 14½ knots, 2 3-in., 10 m.

RIVER GUNBOATS.—**Sandpiper** (ex-British, 1933), 185 tons, 11½ knots, 1 3·7-in. howitzer, 1 6-pdr.; **Falcon** (ex-British, 1928), 372 tons, 15 knots, 1 3·7-in. howitzer, 2 6-pdr.; **Gannet** (ex-British, 1925), 310 tons, 16 knots, 2 3-in. h.a.; **Kiang Hsi** and **Kiang Kan** (Germany, 1912), 140 tons, 9 knots.

TORPEDO BOAT.—**Hu Chun** (Kobe, 1908), 96 tons, 20 knots, 1 1·85-in., 1 1·5-in., 3 14-in. torpedo tubes.

ARMED LAUNCHES.—15 in number.

ARMED TRANSPORTS.—25 in number

PATROL VESSELS.—4 in number.

COLOMBIA.

DESTROYERS.—**Caldas** and **Antioquia** (Yarrow, 1934), 1,282 tons, 319 ft. B.P., 31 ft. beam, 36 knots, 4 4·7-in., 3 1·5-in. a.a., 2 depth charge throwers, 8 21-in. torpedo tubes, 236 tons of oil fuel, 140 complement.

GUNBOATS.—**Mariscal Sucre** (Yarrow, 1909), 500 tons, 23 knots, 2 3-in., 3 m. ; **Cordoba** (ex-French, 1919), 450 tons, 16 knots, 4 3-in. ; **Pichincha**, **Carabobo**, and **Junin** (ex-French, 1925), 200 tons, 13 knots, 1 3-in., 2 m. ; **Barranquilla** and **Cartagena** (Yarrow, 1930), 140 tons, 13·5 knots, 2 3-in., 8 m. ; **A, B, C, D** (ex-German L.M. 15, 17, 19, 20, 1918), 12 tons, 28 knots, 2 m. ; **Nos. 1, 2, 3, 4** (Yarrow, 1913), 20 tons, 12 knots, 1 1-pdr.

RIVER GUNBOAT.—**Presidente Mosquera**, 200 tons.

TRANSPORTS.—**General Mosquera** (Caledon Shipbuilding Co., 1910), 3,500 tons, 2 3·5-in. ; **Bogota** (ex-German, 1919), 500 tons, 16 knots, 1 3·5-in., 2 3-in., 2 m. ; **Boyaca** (ex-U.S.A., 1920), 3,000 tons.

TRAINING SHIP.—**Cucuta** (ex-U.S.A., 1913), 12,000 tons, 10 knots.

CUBA.

LIGHT CRUISER.—**Cuba** (Cramp, Philadelphia, 1911), 2,055 tons, 18 knots, 6,000 H.P., 2 4-in., 6 3-in. H.A., 4 6-pdr., 4 3-pdr., 2 m., 250 tons of coal.

GUNBOATS.—**General Zagas**, 500 tons, 2 1-pdr. ; **Capitan Fernandez Quevedo** (Havana, 1932), 115 tons, 12 knots, 1 3-in. H.A., 2 1-pdr. ; **Habana**, **Pinar del Rio**, **Villas**, and **Matanzas** (Havana, 1912), 80 tons, 12 knots, 1 1-pdr. ; **24 de Febrero** and **10 de Octubre** (J. S. White, 1911), 218 tons, 12 knots, 3 3-pdr. ; **Baire** (Danzig, 1906), 500 tons, 14 knots, 4 3-in., 2 3-pdr., 1 m. ; **Yara** (Middlesbrough, 1905), 450 tons, 12 knots, 1 3-in. H.A., 2 6-pdr. ; **20 de Mayo** (Glasgow, 1895), 200 tons, 12 knots, 2 3-pdr., 1 1-pdr. ; **Enrique Villuendus** (ex-U.S.A., 1899), 178 tons, 16 knots, 2 3-pdr.

TRAINING SHIP.—**Patria** (Cramp, Philadelphia, 1911), 1,200 tons, 16 knots, 2 3-in., 4 6-pdr., 4 3-pdr.

DOMINICA.

ARMED TRANSPORT.—**Presidente Trujillo** (Germany, 1910), 1,300 tons, 11 knots.

COAST GUARD CUTTERS.—3 in number (ex-U.S.A. C.G. 110, 144, 302) (1924), 37 tons, 13·5 knots, 1 1-in.

YACHT.—**Ramsis** (ex-Camargo, 1928), 969 tons gross, 2 3-pdr.

ECUADOR.

PATROL VESSEL.—**Tarqui**, 50 tons, 1 torpedo tube.

TRAINING SHIP.—**President Alfaro** (Southampton, 1917), 1,030 tons, 16 knots, 2 3-in.

GUNBOAT.—**Abdon Calderon** (ex-Cotopaxi) (1884), 700 tons, 10·5 knots.

TRANSPORT.—**Patria**.

DESPATCH BOAT.—**Atahualpa**.

EGYPT.

PATROL VESSELS.—**Raqib** (Alexandria, 1938), 15 knots, 1 1·46-in. ; **Al Sarea** (J. S. White, 1937), 13 tons, 36 knots, 1 1·46-in. ; **El Amira Fawzia** (Swan Hunter, 1929), 2,640 tons, 14 knots, 2

3-pdr. ; **El Amir Farouq** (Hawthorn Leslie, 1926), 1,441 tons, 17 knots, 1 6-pdr., 2 m. ; **Mabahiss** (Swan Hunter, 1930), 618 tons, 11 knots, 1 3-pdr.

TRAINING SHIP.—**Abdel Monaym** (Clydebank, 1902), 610 tons, 13·5 knots.

INSPECTION VESSEL AND STORE CARRIER.—**Naphtys** (Kiel, 1905), 650 tons, 7·5 knots.

TRANSPORT.—**Sollum** (ex-Syringa, Workman Clark, 1917), tons 1,290, 16 knots, 1 3-pdr.

ROYAL YACHT.—**Mahroussa** (Poplar, 1865), 4,561 tons, 16 knots.

COASTAL MOTOR BOATS.—**Darfeel** and **Noor El Bahr** (Thornycroft, 1926), 20 tons, 17 knots, 1 1·46-in. ; **Qamar**, 23 tons, 11 knots ; **El Hoot**, 24 tons, 7 knots.

ESTONIA.

TORPEDO BOAT.—**Sulev** (ex-German, 1917), 200 tons, 26 knots, 2 8-in., 2 18-in torpedo tubes, 10 mines.

SUBMARINES.—**Lembit** and **Kalev** (Vickers, 1937), 620/820 tons, 13½/8½ knots, 1 1·57-in., 4 21-in. torpedo tubes, 20 mines.

MINELAYERS.—**Suuroop** and **Ristna** (1906), 500 tons, 12 knots, 1 3-in., 1 1-pdr.

ICEBREAKERS.—**Suur Toll** (Stettin, 1914), 4,000 tons, 15 knots ; **Tasua** (1914), 1,100 tons ; **Jaan Poska** (1929), 250 tons, 11 knots.

PEIPUS LAKE GUNBOATS.—**Ahti** (1908), 144 tons, 10 knots, 2 1·5-in., 2 1-pdr. ; **Tartu**, 108 tons, 12 knots, 2 1·5-in., 2 m.

GUNBOAT.—**Laine** (1915), 450 tons, 12 knots, 2 3-in.

RIVER GUNBOAT.—**Mardus** (1911), 100 tons, 10 knots, 2 3-in., 2 m.

MINESWEEPERS.—**Keri** (ex-Kalev) and **Vaindlo** (ex-Olev) (1914), 50 tons, 9 knots, 1 3-pdr. ; **Tahkona** (1919), 45 tons, 12 knots.

TUG.—**Tallin** (1900), 100 tons, 10 knots.

TENDERS.—**Kompass** (1919), 300 tons, 9 knots ; **Sakala** (1906), 30 tons, 8 knots.

FINLAND.

ARMoured VESSELS.—**Väinämöinen** (Crichton-Vulcan, 1932), 300 ft. length, 54 ft. beam, 3,900 tons, 15 knots, 4 10-in., 8 4·1-in. A.A., 4 m., 2-in. armour belt.

MOTOR TORPEDO BOATS.—**Sisu** and **Hurja** (ex-Italian, 1920), 13 tons, 25 knots, 2 m., 2 18-in. torpedo tubes ; **Isku** (1925), 54 ft. length, 11 tons, 25 knots ; **Syöksy**, **Nuoli**, **Vinha**, and **Raju** (1929), 13 tons, 35 knots, 2 m., 2 18-in. torpedo tubes. 5 ordered in U.S.A., March, 1940.

SUBMARINES.—**Iku-Turso**, **Vetehinen** and **Vesihiiisi** (Abo, 1930), 490/710 tons, 14·5/8·5 knots, 1 3-in., 4 21-in. torpedo tubes, 20 mines ; **Vesikko** (Crichton Vulkan, Abo, 1933), 250/300 tons, 12/7 knots, 1 m., 3 21-in. torpedo tubes ; **Saukko** (Helsingfors, 1930), 100/136 tons, 8/5·5 knots, 1 m., 2 18-in. torpedo tubes, 6 mines.

GUNBOATS.—**Turunmaa** (ex-Russian Orlan, 1918), 342 tons, 14 knots, 2 3-in., 5 6-pdr. ; **Uusimaa** (ex-German Beo) and **Hämeenmaa** (ex-German Wulf, 1918), 400 tons, 15 knots, 2 4-in., 1 1·5-in. A.A. ; **Vakava** and **Aallokas** (1935).

MINELAYERS.—**Pommi, Paukku, Lieska, Miina, Loimu** (1916), 80 tons, 8 knots, 2 m., 24 mines ; **Vakava** and **Klercker** (building), 300 tons.

MINESWEEPERS.—**Rautu** (ex-Russian Murman, 1917) and **Vilppula** (1916), 165 tons, 12 knots, 2 3-in., 1 1·5-in. A.A. ; **Ahven, Kiiski, Muikku,** and **Sarki** (1937), 17 tons. 10 knots.

SALVAGE VESSEL.—**Mursu** (ex-Stannum) (1902), 615 tons gross, 8 knots.

SUBMARINE DEPOT SHIP.—**Louhi** (ex-Russian Voin, 1917), 640 tons, 11 knots, 2 1·85-in., 150 mines.

MOTOR LAUNCHES.—**Haukka, A.37, A.38, A.40, A.42, A.43, A.45, A.F.2, B.3, B.V.A. and B.V.D.** (1934), 9–25 tons, 8–10 knots, 1 m.

PATROL BOATS.—**V.M.V. 1, 2, 5, 6** (1931), **V.M.V. 8–17** (Germany, 1935), 30 tons, 25 knots, 1·75-in.

TRAINING SHIP.—**Suomen Joutsen** (St. Nazaire, 1902), 3,000 tons, 6 knots.

ICEBREAKERS.—**Sisu** (Helsingfors, 1939), 2,000 tons, 15 knots, 2 4-in. ; **Otso** (1936), 800 tons, 13 knots ; **Jääkarhu** (1926), 4,825 tons, 15 knots ; **Sampo** (Armstrong, 1899), 1,850 tons, 15 knots, 3 4·7-in. ; **Tarmo** (ex-Sampo II) (Armstrong, 1907), 2,400 tons, 14 knots ; 3 4·7-in. ; **Murtaja** (Stockholm, 1890), 820 tons, 11 knots, 1 4·7-in. ; **Apu** (Kiel, 1899), 600 tons, 13 knots, 2 4·7-in. ; **Voina** (Sandvikens, 1924), 2,000 tons, 14 knots, 1 4·7-in.

HAYTI.

SPECIAL SERVICE VESSELS.—**Nord Alexis** (1891), 1,230 tons, 14 knots, 2 4·7-in. ; **Veretieres** (1889), 270 tons, 9 knots, 2 m. ; **17 Décembre** 851 tons ; **Pacifique**, 488 tons, 14 knots.

HUNGARY.

PATROL VESSELS.—**Debreczen, Gyor, Baja, and Sopron** (Budapest, 1918), 140 tons, 15 knots, 2 2·75-in., 2 m. ; **Kecskemet** and **Szeged** (Budapest, 1915), 133 tons, 15 knots, 4 2·75-in., 2 m.

AUXILIARY VESSELS.—**Csobánc** (1926), 300 tons, 8 knots ; **Körös** (1916), 170 tons ; **Maros** (1927), 40 tons ; **Mecsek**, 35 tons.

MOTOR BOATS.—**Honved, Huszar, and Tuzer** (1916), 17 tons, 7 knots, 2 m. ; 2 in number, 30 tons ; 10 in number, 10 tons.

TRAINING SHIP.—**Badacsony** (1909), 230 tons, 10·5 knots.

ICELAND.

FISHERY PROTECTION VESSELS.—**Aegir** (1925), 500 tons, 14 knots, 1 2·24-in. ; **Thor** (ex-German, 1922), 300 tons, 10 knots, 1 2·24-in. ; **Odinn** (1938), 72 tons, 11 knots, 1 1·85-in.

IRAQ.

PATROL VESSELS.—**Nos. 1, 2, 3, 4** (Thornycroft, 1937), 100 ft. length, 64 tons, 12 knots, 1 3·7-in. howitzer, 4 m.

YACHT.—**Panfield X** (ex-Sans Peur, J. Brown, 1923), 1,200 tons, 13 knots.

LATVIA.

- SUBMARINES.—**Ronis** and **Spidola** (Nantes, 1927), 390/514 tons, 14·5/9·2 knots, 1 3-in. A.A., 2 m., 6 18-in. torpedo tubes.
- SUBMARINE DEPOT SHIP.—**Varonis** (1908), 250 tons, 10 knots.
- GUNBOAT.—**Virsaitis** (ex-German, 1917), 380 tons, 16 knots, 2 3-in. 2 6-pdr., 1 3-in. H.A., 1 torpedo tube.
- MINESWEEPERS.—**Imanta**, **Viesturs** (1926), 215 tons, 14 knots, 1 3-in. 4 m.
- ICEBREAKER.—**Krisjanis Valdemars** (Beardmore, 1925), 2,800 tons, 14 knots.
- SURVEYING VESSEL.—**Hidrografs** (Danzig, 1918), 450 tons, 10 knots.

LITHUANIA.

- PATROL VESSEL.—**Prezidentas Smetone** (ex-German, 1917), 500 tons, 17 knots, 2 3-in., 3 m.

MANCHUKUO.

- DESTROYER.—**Hai Wei** (ex-Japanese Kashi, Maizura, 1917), 755 tons, 31·5 knots, 3 4·7-in., 3 m., 6 18-in. torpedo tubes.
- GUNBOATS.—**Chingjen** and **Tingpjen** (Harima, 1935), 290 tons, 13 knots, 2 4·7-in., 3 m.; **Shun T'ien** and **Yang Min** (Harima, 1934), 270 tons, 12 knots, 2 4·7-in. A.A., 3 m.; **Li Sui** (ex-German, 1910), 270 tons, 13 knots, 2 2·24-in., 2 m.; **Li Chi** (ex-German, 1904), 270 tons, 13 knots, 1 3-in., 4 m.; **Kuang Ning**, **Kuang Ch'ing**, and **Chiang T'ung** (1900), 200 tons, 9 knots, 1 3-in., 4 m.; **Ta T'ung** and **Li Min** (Kobe, 1933), 65 tons, 10·5 knots, 3 m.
- ARMED LAUNCHES.—**Chi Min** (Kawasaki, 1934), 20 tons, 10 knots, 2 m.; **En Min**, **Hui Min**, **P'u Min** (Kawasaki, 1933), 15 tons, 10 knots, 2 m.
- PATROL BOATS.—**Hailung** and **Haifeng** (Kawasaki, 1933), 184 tons, 14 knots, 2 3·1-in., 2 m.; **Hai Kuang**, **Hai Jui**, **Hai Jung**, **Hai Hua** (Kawasaki, 1933), 42 tons, 12 knots, 1 2·24-in., 2 m.; **Daichi Kaihen** and **Daini Kaihen** (Yokohama, 1933), 42 tons, 15 knots, 2 m.

MEXICO.

- COAST DEFENCE VESSEL.—**Anahuac** (ex-Brazilian Deodoro, La Seyne 1898), 3,162 tons, 15 knots, 2 9·4-in., 4 4·7-in., 4 6-pdr., 2 1-pdr., 14-in. armour belt.
- SLOOPs.—**Durango** (Valencia, 1936), 1,600 tons, 20 knots, 4 4-in., 2 twin 1-in. pom poms, 2 quadruple ·5-in. m., can carry 500 men and 80 horses; **Protosi** (Cadiz, 1935), **Queretaro** and **Guanajuato** (Ferrol, 1935), 1,200 tons, 20 knots, 3 4-in., 2 twin 1-in. pom poms, 2 quadruple ·5-in. m. A.A., can carry 250 men and 20 horses.
- GUNBOATS.—**Nicolas Bravo** (Odero, 1904), 1,227 tons, 12·3 knots, 2 4-in., 4 6-pdr., 2 m.; **G. Nos. 20-29** (Bilbao, 1935), 130 tons, 26 knots, 1 twin ·5 pom pom, 1 quadruple 1-in. pom. pom.
- TRANSPORTS.—**Progreso** (Genoa, 1907), 1,590 tons, 13 knots, 4 6-pdr., 2 m.; **Bolivar** (1920), **Washington** (1920), **Moctezuma** (1919), **Coahuila** and **Jalisco** (Philadelphia, 1916), 5,794 tons, 10·5 knots.
- OIL TANKER.—**Mexico** (1913), 2,559 tons (gross).

PATROL BOATS.—**Mazatlan**, **Acapulco**, and **Vera Cruz** (Canada, 1918), 486 tons, 8 knots, 1 2·2-in., 2 1·5-in., 2 m.

NICARAGUA.

GUNBOAT.—**Momotombo**, 400 tons, 2 3-in., 1 6-pdr.

PATROL BOAT.—1 in number (ex-U.S.A., CG274) (1924), 37 tons, 75 ft., 13·5 knots, 1 1-pdr.

PARAGUAY.

GUNBOATS.—**Paraguay** and **Humaita** (Genoa, 1931), 636 tons, 17 knots, 4 4·7-in., 4 3-in. H.A., 2 m.; **Capitan Cabral** (Haarlem, 1907), 120 tons, 10 knots, 1 3-in., 2 6-pdr., 2 m.; **Taguari** (Hosking, 1910), 150 tons, 10 knots, 4 3-in., 2 1·46-in.

DESPATCH VESSEL.—**Teniente Herreros** (Conrad, 1908), 100 tons, 12 knots, 1 3-in., 2 1-pdr., 2 m.

PERSIA (IRAN).

GUNBOATS.—**Babr** and **Palang** (Palermo, 1932), 950 tons, 17 knots, 2 4-in., 2 3-in. H.A., 2 m.; **Shahin** (Vienna, 1917), 150 tons, 3 1-pdr.; **Homay** (Ancona, 1935), 700 tons.

PATROL VESSELS.—**Moti** (ex-Karkas), **Lal** (ex-Simorgh), **Hira** (ex-Chahbaaz), and **Nilam** (ex-Chahrokh) (Naples, 1932), 325 tons, 15 knots, 900 B.H.P., 2 3-in., 2 m.

MOTOR BOATS.—**Azerbaijan**, **Gehlani**, and **Mazenderan** (Palermo, 1935), 68½ ft., 28 tons, 14 knots, 1 1·5-in.

TUG.—**Niru** (1935), 14 knots.

PERU.

LIGHT CRUISERS.—**Almirante Grau** and **Coronel Bolognesi** (Vickers, 1907), 3,200 tons, 24 knots, 2 6-in., 8 3-in., 8 m., 2 18-in. torpedo tubes.

DESTROYERS.—**Almirante Guise** (ex-Russian, 1917), 1,400 tons, 35 knots, 5 4-in., 1 2-pdr. A.A., 1 m., 3 18-in. torpedo tubes; 80 mines; **Almirante Villar** (ex-Russian, 1918), 1,185 tons, 35 knots, 4 4-in., 1 2-pdr., 2 m., 3 18-in. torpedo tubes, 80 mines.

SUBMARINES.—**R.1-4** (U.S.A., 1926-28), 576/682 tons, 14·5/10 knots, 1 3-in. 4 21-in. torpedo tubes.

GUNBOATS.—**Amazonas** and **Loreto** (Electric S.B. Co., 1934), 250 tons, 15 knots, 4 3-in. H.A., 2 ·8-in., 2 m.; **America** (1904), 350 tons, 14 knots, 2 3-pdr.; **Coronel Portillo** (ex-San Pablo, 1902), 49 tons, 7 knots, 2 3-pdr.; **Iquitos** (1875), rebuilt, 1896, 50 tons, 7·5 knots, 4 1·46-in., 2 ·8-in., 2 m.; **Napo** (Yarrow, 1921), 98 tons, 12 knots, 3 1·8-in.

TRANSPORT.—**Rimac** (ex-Eten, 1907), 6,848 tons gross, 12 knots, cargo capacity, 7,000 tons.

OILER.—**Parinas** (Thornycroft, 1921), 2,820 tons, 10 knots, carries 4,300 tons of oil.

PHILIPPINES.

MOTOR TORPEDO BOATS.—4 in number (Thornycroft, 1939), 40 knots, 4 Lewis guns, 2 torpedo troughs.

POLAND.

DESTROYERS.—**Blyskavica** (J. S. White, 1937), 2,144 tons, 39 knots, 7 4·7-in., 4 1·57-in., 2 triple 21-in. torpedo tubes; **Burza** (Chantiers Navals, 1932), 1,540 tons, 35 knots, 4 5·1-in., 1 2·9-in. H.A., 6 21·7-in. torpedo tubes; **Piorun** (1940), **Krakowiak**, British built; **Garland**, ex-British, Greyhound class; **Slazak**, ex-British, Hunt class.

SUBMARINES.—**Sep** (Rotterdam, 1939), 1,090/1,450 tons, 14·5/11 knots 1 4·1-in., 2 1·57-in. A.A., 12 21·7-in. torpedo tubes; **Zbik**, **Rys**, and **Wilk** (built in France, 1931–32), 965/1,230 tons, 14/9 knots, 1 3·9-in., 1 2-pdr. A.A., 6 21·7-in. torpedo tubes, 40 mines; **Sokol** (1941), British Ursula Class.

MINELAYER.—**Gryf** (Havre, 1938), 2,100 tons, 20 knots, 6 4·7-in., 4 1·57-in. A.A., 800 mines.

MINESWEEPERS.—**Oxhoft** (ex-Zuraw) (Gdynia, 1939), 200 tons, 17 knots; **Westerplatte** (ex-Czajka) (Modlin, 1936), 140 tons, 15 knots, 1 3-in., 4 m.

TRAINING SHIP.—**Iskra** (ex-British, 1917), Three Masted Schooner, 500 tons.

MOTOR GUNBOATS.—ex-British, number unknown.

NOTE.—**Sep**, **Zbik**, and **Rys** are interned in Sweden.

PORTUGAL.

DESTROYERS.—**Douro**, **Tejo**, **Dao** (Yarrow, Lisbon, 1935–36), **Lima** and **Vouga** (Yarrow, Glasgow, 1933), 1,220 tons, 33,000 S.H.P., 36 knots, 4 4·7-in., 3 1·5-in. A.A. pom poms, 2 quadruple 21-in. torpedo tubes, 20 mines, complement 164; **Tamega** (Lisbon, 1924), 520 tons, 11,000 S.H.P., 27 knots, 1 4-in., 2 3-in., 4 18-in. torpedo tubes, complement 80. Three Destroyers building.

MOTOR TORPEDO BOATS.—6 in number, building.

SUBMARINES.—**Golfinho**, **Espadarte**, **Delfim** (Vickers, 1934–35), 900/1,100 tons, 2,300/1,000 B.H.P., 16·5/9·2 knots, 1 4-in., 2 m., 6 21-in. torpedo tubes. Three submarines building.

GUNBOATS.—**Faro** and **Lagos** (Lisbon, 1928, 1932), 300 tons, 13 knots, 2 1·85-in.; **Beira** (1910), **Ibo** (1912), **Mandovi** (1918), **Zaire** (1297), **Diu** (1932), built at Naval Arsenal, Lisbon, 400 tons, 13 knots, 2 3-in., 2 3-pdr., 2 m.; **Limpopo** (Blackwall, 1890), 200 tons, 11 knots, 2 3-pdr. 6 in number building.

RIVER GUNBOATS.—**Macau** (Yarrow, 1909), 95 tons, 12 knots, 2 6-pdr., 3 m.; **Rio Minho** (Lisbon, 1904), 37 tons, 7·5 knots, 1 1-pdr., 2 m.; **Tete** (Yarrow, 1904), 70 tons, 7·5 knots, 2 3-pdr., 3 1-pdr.

SLOOP.—**Bartolomeu Dias** and **Afonso de Albuquerque** (Hawthorn Leslie, 1935), 1,780 tons, 21 knots, 4 4·7-in., 2 3-in. H.A., 4 pom poms, 2 depth charge throwers, 40 mines; **Joao de Lisboa** (ex-Infante don Henrique, 1937) and **Pedro Nunes** (1935), built at Lisbon, 1,080 tons, 17 knots, 2 1·85-in., 4 1·57-in. A.A., 2 depth charge throwers; **Goncalves Zarco** and **Goncalo Velho** (Hawthorn Leslie, 1933), 950 tons, 16·5 knots, 3 4·7-in., 2 1·85-in., 2 2-pdr. pom poms; **Republica** (ex-H.M.S. *Gladiolus*, Scotstoun, 1915), 950 tons, 17 knots, 2 4-in., 2 3-in. H.A., 4 3-pdr., 2 m.

- TRAINING SHIPS.—**Vulcano** (Thornycroft, 1910), 500 tons, 12 knots ; **Lince** (Leghorn, 1911), 77 tons, 12 knots ; **Sagres** (Bremerhaven, 1896), 3,100 tons, 7 knots.
- FISHERY PROTECTION VESSELS.—**Lidador** (Birkenhead, 1884), 200 tons, 9 knots, 2 8-pdr. ; 2 in number, building, 250 tons, 18 knots, 4 1-in. A.A. 6 in number building.
- HOSPITAL SHIP.—**Gil Eanes** (Bremerhaven, 1914), 2,700 tons, 10·5 knots.
- SURVEYING SHIPS.—**D. Joad de Castro** (Alfeite, 1941), 960 tons, 14 knots, 1 8-in., 1 aircraft ; **Berrio** (La Loire, 1898), 350 tons, 10 knots ; **Carvalho Araujo** (ex-H.M.S. Jonquil, 1915), 900 tons, 17 knots.
- LIGHTHOUSE TENDER.—**Almirante Schultz** (Penhoey, 1929), 520 tons, 11·5 knots.
- TANKER.—**Sambrax** (building), 7,000 tons (capacity 3,500 tons), 12 knots, 1 8·9-in. A.A.

ROUMANIA.*

- DESTROYERS.—**Regele Ferdinand** and **Regina Maria** (Naples, 1930), 1,785 tons, length 348½ ft., 42,000 S.H.P., 38 knots, 5 4·7-in., 1 8-in. H.A., 2 triple 21-in. torpedo tubes, 50 mines ; **Marasti** (ex-Italian Sparviero, 1917), 1,460 tons, 40,000 S.H.P., 35 knots, 5 4·7-in. 4 8-in. H.A., 2 m., 2 double 18-in. torpedo tubes, 50 mines.
- MOTOR TORPEDO BOATS.—**Viforul**, **Viscolul**, and **Vijelia** (ex-British, 1939), 70 ft. length, 30 tons, 41 knots, 8 m., 2 21-in. torpedo tubes.
- TORPEDO BOATS.—**Naluca**, **Sborul**, and **Zmeul** (ex-Austrian, 1913-14), 260 tons, 28 knots, 2 2·6-in., 2 torpedo tubes in **Naluca** and **Sborul**.
- SUBMARINES.—**Delfinul** (Fiume, 1936), 700/950 tons, 1,600/1,300 S.H.P., 14/9·5 knots, 1 4·2-in., 6 21-in. torpedo tubes ; **S.1**, **S.2** (Galatz, 1941).
- SUBMARINE DEPOT SHIP.—**Constanta** (Fiume, 1930), 1,821 tons, 13 knots, 2 4-in.
- RIVER MONITORS.—**Lascar Catargiu**, **Ioan Bratianu**, **Mihail Kogalniceanu**, **Alexandru Lahovari** (Trieste, 1907-08), 680 tons, 13 knots, 3 4·7-in., 1 8-in. A.A., 2 1·85-in., 4 m. ; **Bucovina** (ex-Austrian Sava, Budapest, 1916), 550 tons, 12 knots, 2 4·7-in., 2 4·7-in. howitzers, 2 2·6-in. A.A., 2 1·85-in. 6 m. ; **Basarabia** (ex-Austrian Inn, Budapest, 1915), 590 tons, 12 knots, 2 4·7-in., 2 4·7-in. howitzers, 2 1·85-in., 9 m. ; **Ardeal** (ex-Austrian Temes, Budapest, 1904), 450 tons, 10 knots, 2 4·7-in., 1 8·5-in. A.A., 2 1·85-in., 2 m.
- GUNBOATS.—**Stihi** (ex-French Friponne, Lorient, 1917), **Dumitrescu** (ex-French Mignonne, Brest, 1917), **Ghiculescu** (ex-French Impatiente, Brest, 1916), 350 tons, 15 knots, 2 3·9-in., 2 m.
- PATROL BOATS.—Nos. 1-7 (Thornycroft, 1908), 100 ft., 50 tons, 18 knots, 1 8-pdr., 1 m.
- RIVER GUNBOATS.—**Bistritsa**, **Oltul**, and **Siretul** (Blackwall, 1888), 100 tons, 12 knots, 1 6-pdr., 1 1-pdr.
- MINELAYERS.—**Admiral Murgescu** (Galatz, 1940), and **Cetetea Alba** (Hamburg, 1940), 812 tons, 16 knots, 2 4-in., 2 1·46-in., 135 mines.

* Under the control of Germany.

YACHTS.—**Luceafarul** (Glasgow, 1931), 1,580 tons, 17 knots; **Taifun** (J. S. White, 1938), 34 tons; **Macin, Stefan Cel Mare**.
TRAINING SHIP.—**Mircea** (Hamburg, 1939), 1,750 tons, 10 knots.
MOTOR BOATS.—10 in number (some armoured), 40 tons, 14 knots.
ARMED MOTOR LAUNCHES.—7 in number, 30–50 tons.

THAILAND.

CRUISERS.—2 in number, building at Trieste, 4,200 tons, 45,000 S.H.P., 30 knots, 6 5·9-in., 6 3-in. A.A., 2 triple 18-in. torpedo tubes.
DESTROYER.—**Phra Ruang** (ex-British Radiant, Thornycroft, 1917), 718 tons, 29,000 S.H.P., 35 knots, 3 4-in., 1 2-pdr. pom pom., 1 m., 2 double 21-in. torpedo tubes.
TORPEDO BOATS.—**Jumbara, Pattani, Surasdra, Chandaraburi, and Bayong** (Monfalcone, 1937), 470 tons, 10,000 S.H.P., 31 knots, 3 3-in. A.A., 4 8-in. m., 6 18-in. torpedo tubes; **Puket and Trad** (Tireste, 1936), 380 tons, 9,000 S.H.P., 31 knots, 3 3-in. A.A., 4 8-in. m., 6 18-in. torpedo tubes. Three in number building at Trieste.
MOTOR TORPEDO BOATS.—6 in number (Thornycroft, 1930–35), 55 ft., 13·5 tons. A number building.
SUBMARINES.—**Blai Jumbol, Sinsamudr, Machanu, Virun** (Mitsubishi, 1938), 325 tons, 14·5/8 knots, 1 m., 5 21-in. torpedo tubes, complement 24. Four others projected.
GUNBOATS.—**Dhamburi and Sri Ayudhya** (Kobe, 1938), 2,000 tons, 15·5 knots, 4 8-in., 4 3-in.; **Sukhodaya** (Vickers, 1930), 890 tons, 13 knots, 2 6-in., 4 3-in. A.A., 2½-in. armour belt; **Mongkut Rajakumarn** (ex-Filipinas, Hong Kong and Whampoa Doca Co., 1887), 700 tons, 11 knots, 2 4·7-in., 2 6-pdr., 3 3-pdr.; **Sugbrib** (1901), 410 tons, 11·5 knots, 1 4·7-in., 5 6-pdr., 2 m.; **Suriya Monthon** (Thornycroft, 1908), 190 tons, 14·5 knots, 1 6-pdr., 4 m.; **Ratnakosindr** (Armstrong, 1925), 890 tons, 12 knots, 2 6-in., 4 3-in. H.A., 2½-in. armour belt.
MINELAYERS.—**Bang Rachan (S1) and Nong Sarai (S2)** (Monfalcone, 1936), 368 tons, 12 knots, 2 3-in., 140 mines. A third vessel is building at Ancona.
PATROL BOATS.—**Klongyai, Takbai, and Kantang** (Yokohama, 1937), 110 tons, 18 knots, 1 3-in., 3 8-in. m., 2 18-in. torpedo tubes. Twelve in number building, 100 tons.
TRAINING SHIPS.—**Tachin and Maeklong** (Uraga, 1937), 1,400 tons, 17 knots, 4 4·7-in., 2 5-in. m. A.A., 2 double 12-in. torpedo tubes, 20 mines; **Chao Phra** (ex-British Havant, 1918), 700 tons, 16 knots. Two others projected.
SURVEY SHIPS.—**Cuong, Han Thale, Lieu Thale, and Chen Thale**, 400 tons, 8 knots.
FISHERY PROTECTION VESSELS.—**Sara Sindhu, Thiew Uthok, Travane Vari** (Bangkok, 1936), 50 tons, 9·5 knots, 1 1·5-in. Three others buiding.
TUG.—**Samet** (ex-Pi-Sua-Nam), 90 tons, 9·5 knots.
TRANSPORTS.—**Angthong** (ex-Maha Chakkri, Kawasaki, 1918), 2,700 tons, 15 knots, 4 3-in.; **Chang** (ex-Vides Kichkar, Maryport,

1902), 750 tons, 9·5 knots ; **Pagan** and **Sichaun** (Harima, 1938), 650 tons.

OIL TANKER.—**Samui** (Hakodate, 1936), 1,800 tons, 12 knots. One other projected.

TURKEY.

BATTLE CRUISER.—**Yavouz Sultan Selim** (ex-Goeben, Hamburg, 1912), 22,734 tons, 52,000 S.H.P., 27 knots, 10 11-in., 10 5·9-in., 8 3·5-in., A.A., 14 1·5-in. m.p.p., 4 m., 4 19·7-in. torpedo tubes, complement 1,000.

CRUISERS.—**Hamidieh** (Armstrong, 1904), 3,790 tons, 12,000 H.P., 22 knots, 2 5·9-in., 6 3-in., 8 3-in. H.A., 2 18-in., torpedo tubes, 70 mines ; **Medjidieh** (ex-Russian Prutt, Cramp, 1904), 3,300 tons, 12,000 H.P., 22 knots, 4 5·1-in., 2 3-in. H.A., 4 m. Two in number projected, 8,000 tons.

DESTROYERS.—**Kocatepe** and **Adatepe** (Ansaldo, 1932), 1,300 tons, 38,000 S.H.P., 38 knots, 4 4·7-in., 3 2-pdr. H.A., 3 m., 6 21-in. torpedo tubes, 40 mines ; **Tinaztepe** and **Zafer** (Riva Trigoso, 1932), 1,840 tons, 50,000 S.H.P., 38 knots, 4 4·7-in., 3 2-pdr. A.A., 2 triple 21-in. torpedo tubes ; **Sultan Hisar** and **Demir Hisar** (Denny Bros., 1941), **Muavenet** and **Gayret** (Vickers, 1941), 1,370 tons, 34,000 S.H.P., 35 knots, 4 4·7-in., 6 1·5-in. A.A., 2 quadruple 21-in. torpedo tubes.

TORPEDO BOATS.—**Berk** (ex-Berkisatvet) and **Peyk** (ex-Peikishevket, Kiel, 1907), 830 tons, 20 knots, 2 6-in., 4 6-pdr., 2 1-pdr., 2 m., 3 18-in. torpedo tubes, 30 mines.

MOTOR TORPEDO BOATS.—A number building.

PATROL MOTOR BOATS.—**Doghan**, **Marti**, and **Deniz Kouchou** (Venice, 1932), 31 tons, 34 knots, 1 3-in., 1 1-in. pom pom., 2 18-in. torpedo tubes, 6 depth charge throwers. Six in number building.

SUBMARINES.—**Burak Reis**, **Murat Reis**, **Uluc Ali Reis**, **Oruc Reis** (Vickers, 1941), 624/856 tons, 1,200/708 H.P., 13·7/8·4 knots, 1 4-in., 3 m., 5 21-in. torpedo tubes ; **Atilay**, **Yildiray** (Istanbul, 1941), **Saldiray** (Kiel, 1939), 820/1,100 tons, 4,800 H.P., 20/9 knots, 1 4-in., 6 21-in. torpedo tubes, 40 mines ; **Dumlupinar** (Monfalcone, 1932), 935/1,220 tons, 2,400/1,400 H.P., 15/9·5 knots, 1 4-in. H.A., 3 m., 4 21-in. torpedo tubes, 40 mines ; **Gur** (Cadiz, 1931), 750/260 tons, 2,800/1,000 H.P., 20/9 knots, 1 6-in., 1 8-in. m., 6 21-in. torpedo tubes ; **Inönü I** and **Inönü II** (Rotterdam, 1928), 433/556 tons, 1,100 H.P., 13·5/8·5 knots, 1 3-in. H.A., 1 m., 6 17·7-in. torpedo tubes ; **Sakarya** (Monfalcone, 1932), 610/940 tons, 1,500/1,100 H.P., 14·5/9·3 knots, 1 4-in., 1 8-in. m., 6 21-in. T.T.

SUBMARINE DEPOT SHIPS.—**Erkin** (ex-S.S. Trier, Bremen, 1923), 16,000 tons, 12·5 knots, 2 m. ; **Akin** (ex-Rasit, Smith's Dom Co., 1913), 33 tons, 12 knots ; **Marmora** (ex-R.S. Syria, 1906), 1,500 tons.

MINESWEEPERS.—**Hizar Reis**, **Issa Reis**, and **Kemal Reis** (La Seyne, 1912), 443 tons, 14 knots, 3 3-in., 2 3-pdr., 2 m. Twenty others.

MINELAYERS.—**Sivri Hisar** and **Yuzbashi Hakki** (Thornycroft, 1940), 350 tons, 15 knots, 1 3-in., 80 mines ; **Atak** and **Dalgital** (Ismidt, 1940, 1941), 500 tons, 13 knots, 40 mines ; **Nusret** (ex-Yardim, Kiel, 1913), 360 tons, 15 knots, 2 m., 25 mines ; **Uyanik** (ex-

Intibah, Port Glasgow, 1886), 600 tons, 12 knots, 50 mines. Sixteen others.

OIL TANKER.—**Gölcük** (Ismidt, 1937), 1,400 tons, 10 knots, 750 tons capacity.

YACHTS.—**Gunes Dil** (ex-Savarona, Hamburg, 1931), 5,700 tons, 21 knots, 2 3-pdr.; **Ertougrul** (Armstrong, 1903), 900 tons, 21 knots, 8 3-pdr.; **Acar**.

GUNBOAT.—**Aidin Reis** (St. Nazaire, 1913), 502 tons, 14 knots, 2 4-in., 2 6-pdr., 4 m.

BOOM DEFENCE VESSELS.—**A.G.I.**; **Geyve**.

DEPOT SHIP.—**Torghud Reis**.

URUGUAY.

TORPEDO GUNBOAT.—**Uruguay** (Stettin, 1910), 1,150 tons, 23 knots, 2 4-7-in., 4 3-in., 6 1-pdr., 4 m., 2 18-in. torpedo tubes.

PATROL BOATS.—**Paysandu**, **Salto**, and **Rio Negro** (Ancona, 1935), 150 tons, 16 knots, 2 3-in., 2 m.

SURVEYING SHIPS.—**18 De Julio** (Leith, 1879), 680 tons, 12 knots, 2 m.; **Capitan Miranda** (Cadiz, 1930), 516 tons, 12 knots.

TUGS.—**Zapican** (ex-Atlantico, 1911), 162 tons, 10 knots; **Vanguardia** (Glasgow, 1908), 95 tons, 12 knots, 2 1-5-in.; **Corsario** (1888), 130 tons, 10 knots, 3 1-5-in.; **Huracán** (ex-Fortuna, 1879), 197 tons, 12 knots.

TRAINING SHIP.—**Aspirante** (ex-Exir Dellen, 1919), 250 tons, auxiliary motor.

VENEZUELA.

MINELAYERS.—**General Soublotte** (ex-Italian Dardanelli) and **General Urdaneta** (ex-Italian Milazzo) (Monfalcone, 1926), 615 tons, 15 knots, 2 4-in., 1 3-in. H.A., 80 mines.

GUNBOATS.—**Mariscal Sucre** (ex-Isla de Cuba, 1886), 1,125 tons, 10 knots, 2 6-in., 2 6-pdr., 6 3-pdr., 2 1-pdr., 1 m.; **General Salom** (ex-U.S. Atlanta, 1884), 750 tons, 12 knots, 1 3-in., 4 6-pdr., 2 m.; **Miranda** (Clydebank, 1895), 200 tons, 10 knots, 5 6-pdr.; **Brion**, 150 tons.

TUGS.—**Aragua** (ex-Caroni), 154 tons, 7 knots, 1 m.; **José Felix Ribas** (ex-Zumbador, 1894), 300 tons, 10 knots, 2 6-pdr., 1 m.

RIVER GUNBOATS.—2 in number.

YACHTS.—**Maracay** (1902), 800 tons, 8 knots, 2 3-in., 2 A.A., 1 m.; **Leandro** (ex-Dr. Brinkley, U.S.A., 1925), 320 tons, 18 knots, 2 1-46-in.

YUGOSLAVIA.*

DESTROYERS.—**Premuda** (ex-Dubrovnik) (Yarrow, 1932), 1,880 tons, 42,000 S.H.P., 37 knots, 4 5-5-in., 2 3-4-in., 6 1-5-in. A.A., 4 2-pdr., 2 triple 21-in. torpedo tubes, 2 depth charge throwers, 40 mines; **Beograd** (Nantes, 1939), **Sebenico** (ex-Ljubljana) (Split, 1939), 1,190 tons, 40,000 S.H.P., 38 knots, 4 4-7-in., 4 1-57-in. A.A., 2 triple 21-in. torpedo tubes, 30 mines; 1 in number (building at Split), 1,875 tons, 38 knots, 5 5-5-in., 10 1-57-in. A.A., 2 m., 6 21-in. torpedo tubes. Two others building.

* Under the control of Germany.

TORPEDO BOATS.—**T. 1-8** (ex-Austrian, 1913-15), 200 tons, 5,000 S.H.P., 28 knots, 2 2·5-in. A.A., 2 m., 2 21-in. torpedo tubes.

MOTOR TORPEDO BOATS.—**Durmitor, Dinara, Kajmakalan, Orsen, Rudnik, Suvobor, Triglav, and Velebit** (Bremen, 1936-37), 92 ft., 62 tons, 34 knots, 1 1·57-in. A.A., 2 21-in. torpedo tubes; **Cetnik** and **Uskok** (Thornycroft, 1927), 59 ft., 13 tons, 40 knots, 1 m., 2 18-in. torpedo tubes.

SUBMARINES.—**Hrabri and Nebojsca** (Armonstrong, 1928), 870/1,146 tons, 2,400/1,600 B.H.P., 15/10 knots, 2 4-in., 6 21-in. torpedo tubes; **Smeli and Osvetnik** (Nantes, 1929), 570/797 tons, 1,480/1,120 S.H.P., 14·5/9·2 knots, 1 4-in., 1 2-pdr. A.A., 1 m., 6 21-in. torpedo tubes.

RIVER MONITORS.—**Varda** (ex-Austrian Bosnia, Budapest, 1916), 530 tons, 13 knots, 2 4·7-in., 2 4·7-in. howitzers, 3 2·6-in. A.A., 2 1·85-in., 8 m.; **Drava** (ex-Austrian Enns, Budapest, 1915), 450 tons, 13 knots, 2 4·7-in., 2 4·7-in. howitzers, 2 2·6-in. A.A., 7 m.; **Sava** (ex-Austrian Bodrog, Budapest, 1904), 380 tons, 13 knots, 2 4·7-in., 1 4·7-in. howitzer, 1 2·6-in. A.A., 1 2·6-in. howitzer, 5 m.; **Morava** (ex-Austrian Koros, Budapest, 1892), 390 tons, 9 knots, 2 4·7-in., 2 9-pdr., 3 m.

MINELAYERS.—**Galeb, Jastreb, Kobac, Labud, Orao, Sokol** (ex-German M class, 1918-19), 330 tons, 15 knots, 2 3·9-in. H.A., 2 m., 40 mines.

MINESWEEPERS.—**Malinska, Marjan, Meljine, Mljet, and Mosor** (Yarrow, Kraljevica, 1931-32), 130 tons, 9 knots, 1 2·5-in. A.A. **D2** (ex-Austrian, 1889), 78 tons, 17 knots, 2 1·45-in., 1 m.

SEAPLANE TENDER AND DEPOT SHIP.—**Zmaj** (Hamburg, 1929), 1,870 tons, 15 knots, 1 4-in. A.A., 10 seaplanes.

SUBMARINE DEPOT SHIP.—**Hvar** (ex-Vintali, Sunderland, 1896), 2,000 tons, 13 knots; **Sitnica** (ex-Najade, 1891), 370 tons, 9 knots, 2 3-pdr.

SALVAGE VESSEL.—**Spasilac** (Kiel, 1930), 740 tons, 15 knots.

TRAINING SHIPS.—Old Cruiser **Dalmacisa**, (ex-German Niobe, Bremen, 1901), 2,360 tons, 22 knots, 6 3·4-in. A.A., 2 19·7-in. torpedo tubes; three masted schooner **Jadran** (Hamburg, 1933), 710 tons, auxiliary motor, 8 knots, 2 2-pdr.

YACHTS.—**Vila** (ex-Dalmata, 1896), 230 tons, 12 knots; **Dragor** (1928) 250 tons, 20 knots.

TUGS.—**Jaki** (1915), 360 tons, 15 knots, 2 1·85-in.; **Mocni** (Antwerp, 1939), 260 tons, 11 knots, 2 1·85-in.; **Silni** (1914), 200 tons, 10 knots, 2 1·85-in.; **Marljivi** (1898), 130 tons, 10 knots; **Snazni**, 100 tons, 10 knots; **Ustrajni** (1917), 160 tons, 9 knots; **Cer** (1909), 250 tons, 15 knots, 2 m.; **Sisak** (ex-Triglav, 1915), 90 tons, 11 knots, 2 m.; **Sabak** (ex-Avala), 90 tons, 8 knots, 2 m.

PATROL BOATS.—**Granicar and Strazar** (1929), 36 tons, 9 knots, 1 3-pdr.

BRITISH AND FOREIGN FLOTILLAS.

Great Britain.

Name or Number.	Built by.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement (War).		
			Length (Extreme).	Beam.	Draught.									
FLOTILLA LEADERS.														
			ft. ins.	ft. ins.	ft. ins.		Tons.		Knots.					
<i>Tribal Class :</i> Arunta Warra- munga and others Two in number ..	Built in Australia Building in Canada	1942	}	36 6	..	2	1870	44,000	36½	8 4·7-in. guns 7 smaller.	1Q. 21"	200		
Ashanti	Denny	1938												
Eskimo	Vickers, Walker	1938												
Matabele	Scotts	1939												
Tartar	Swan Hunter ..	1939												
Maori	Fairfields ..	1938	}	34 0	..	2	1530	38,000	36½	{ 5 4·7-in. 2 2·5-in. M. 5 smaller }	2 Q. 21"	175		
Nubian	Thornycroft ..	1938												
Inglefield	Cammell Laird	1937												
Faulknor	Yarrow ..	1935												
Duncan	Portsmouth Dockyard	1933												
Codrington ..	Swan Hunter ..	1930	345·0	33·9	10·0	2	1540	39,000	35	{ 5 4-in. 2 2-pdr. 1 M., 4 L.	2 T. 21"	182		
Wallace	Thornycroft ..	1925	}	31 11	12 4	2	1480	40,000	36	{ 5 4·7-in. 1 3-in. A.A. 2 2-pr. A.A. 1 M., 4 L.				
Keppel	" ..	1925												
Broke, ex-Rooke	" ..	1925												
Douglas	" ..	1918												
Campbell	" ..	1918												
Mackay, ex- Claverhouse ..	Cammell Laird ..	1919	}	31 9	12 3	2	1530	40,000	36·5	{ 5 4·7-in. 1 3-in. A.A. 2 2-pr. A.A. 1 M., 4 L.	2 T. 21"	182		
Malcolm	" ..	1919												
Montrose	Hawthorn Leslie	1918												

† Escort vessel armed with 4-in. guns.

Name or Number.	Built by.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement (War).
			Length. (Extreme.)	Beam.	Draught.							
			Feet.	ft. ins.	ft. ins.		Tons.		Knots.			
<i>Rotherham, Quilliam, Pakenham, Onslow, Napier, Milne, Laforey, Kelly, Jacelin, Intrepid, Hero, Greyhound, Fearless, Eclipse, Defender, Beagle, & Acasba Classes :</i>												
Racehorse												
Raider ..												
Rapid ..												
Redoubt ..												
Relentless ..												
Rotherham												
Quadrant												
Quail ..												
Quail ..												
Quiberon ..												
Quickmatch												
Quilliam ..												
Pakenham												
Paladin ..												
Panther ..												

Torpedo tubes : T. = triple.

Q. = quadruple.

Great Britain—continued.

Name or Number.	Built by.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement (War).
			Length (Extreme.)	Beam.	Draught.							
			Feet.	Feet.	Feet.		Tons.		Knots.			
DESTROYERS—												
<i>Rotherham &c.</i>												
<i>Classes</i>												
Partridge
Pathfinder ..												
Penn ..												
Petard ..												
Porcupine ..												
Obdurate ..												
Obedient ..												
Offa ..												
Onslaught ..												
Onslow ..												
Opportune ..												
Oribi ..												
Orwell ..												
Napier (leader)	Fairfield ..	1941-42	6 4-7-in.	8 21"	..
Nerissa ..	John Brown ..											
Nizam ..	Denny ..											
Noble ..	Thornycroft ..											
Nonpareil ..	Scotts ..											
Norman ..	Parsons (Hulls by											
Norseman ..	Vickers ..											
Milne (leader)	Stephens ..											
Markaman ..	Fairfields ..											
Marne ..	Yarrow ..											
Martin ..	Cammell Laird ..											
Matchless ..	Hawthorn Leslie ..											
Meteor ..	Scotts ..	1941	1935	48,000	36	6 4-7-in.	8 21"	..
Musketeer ..	Fairfields ..											
Myrmidon ..	Yarrow ..											
Laforey (leader)	Cammell Laird ..											
Larne ..	Hawthorn Leslie ..											
Legion ..	Scotts ..											
Lightning ..	Swan Hunter ..											
Lookout ..	Fairfield ..											
Loyal ..	Thornycroft ..											
Khartoum ..	Scotts ..											
Kelvin ..	Swan Hunter ..											
Kimberley ..	Fairfield ..											
Janus ..	Thornycroft ..	1939	..	35 0	1690	40,000	36	6 4-7-in. guns 7 smaller	10 21"	183
Javelin ..	Swan Hunter ..											
Jervis (leader)	Thornycroft ..											
Icarus ..	Hawthorn Leslie ..											
Ilex ..	J. Brown ..											
Isis ..	Yarrow ..											
Intrepid ..	J. S. White ..											
Impulsive ..	Vickers (Parsons) ..											
Hero ..	Scotts ..											
Hotspur ..	Vickers-Armstrong ..											
Griffin ..	Fairfields ..											
Garland ..	Stephen & Sons ..	1936	323	33 8	8 6	2	1335	34,000	36	4 4-7-in. guns 2-5-in. M. 5 smaller	2 q. 21"	145
Gallant ..	Brown ..											
Foxhound ..	J. S. White ..											
Fortune ..	Parsons/Vickers-Armstrong ..											
Forrester ..	Denny ..											
Fury ..	Scotts ..											
Fame ..	Hawthorn Leslie ..											
Firedrake ..	Swan Hunter ..											
Eclipse ..	Thornycroft ..											
Echo ..	Brown ..											
Escapade ..	Hawthorn Leslie ..											
Encounter ..	Palmer ..	1931	323	32½	8½	2	1360	34,000	35½	4 4-7-in. 2-2-pr. 1 M., 4 L.	2 q. 21"	140
Express ..	Swan Hunter ..											
Decoy ..	Thornycroft ..											
Beagle ..	Brown ..											
Boadicea ..	Hawthorn Leslie ..											
Boreas ..	Palmer ..											
Brilliant ..	Swan Hunter ..											
Bulldog ..	Swan Hunter ..											

Torpedo tubes : T. = triple.

q. = quadruple.

Great Britain—continued.

Name or Number.	Built by.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement (War).
			Length. (Extreme.)	Beam.	Draught.							
DESTROYERS—			Feet.	Feet.	Feet.		Tons.		Knots.			
<i>Rotherham, etc., Classes.</i>												
Achates	Brown	1930	323	32½	8½	2	1350	34,000	35½	4 4·7-in., 2 2-pr., 1 M., 4 L.	2 Q. 21"	140
Active	Hawthorn Leslie ..	1930										
Antelope	Scotts "	1930										
Anthony	Vickers-Armstrong	1930										
Arrow												
<i>Thornycroft Type :</i>												
Amazon	Thornycroft	1927	323	31½	9	2	1350	39,500	37	4 4·7-in., 2 2-pr., 1 M., 4 L.	2 T. 21"	140
<i>Yarrow Type :</i>												
Ambuscade ..	Yarrow	1927	322	31	8½	2	1170	33,000	37		5 21"	
<i>Admiralty "S" Class :</i>												
Saladin	Stephen	1919	276	26½	10½	2	905	27,000	36	3 4-in., 1 2-pr., 1 M., 4 L.	2 D. 21"	103
Sabre	"	1918										
Sardonyx	"	1919										
Scimitar	Brown	1918										
Thanet	Hawthorn Leslie ..	1919										
Thracian	"	1922										
Stronghold ..	Scott "	1919										
Scout	Brown	1918										
Shikari	{ Doxford Chatham }	1924										
<i>Admiralty "V" Class:</i>												
Vansittart ..	Beardmore	1919	312	29½	10½	2	1120	27,000	34	4 4·7 in., 2 2-pr., 1 M., 4 L.	2 T.	130
Venomous ..	Brown	1919										
Verity	"	1919										
Volunteer ..	Denny	1919										
Wanderer ..	Fairfield	1919										
Whitshed ..	Swan Hunter ..	1919										
Witherington	J. S. White ..	1919	312	29½	10½	2	1120	27,000	34	4 4·7 in., 2 2-pr., 1 M., 4 L.	2 T.	120
Wivern	"	1919										
Wolverine ..	"	1920										
Worcester ..	"	1922										
Whitehall ..	{ Swan Hunter Chatham .. }	1925										
Walpole	Palmer	1918	312	29½	10½	2	1100	27,000	34	4 4·7 in., 2 2-pr., 1 M., 4 L.	2 T.	120
Windsor	Scott	1918										
Wrestler	Swan Hunter ..	1918										
† Winchester	J. S. White ..	1918										
† Wolfhound ..	Fairfield	1918										
† Westminster	Scott	1918	312	29½	10·7	2	1100	27,000	34	4 4·7 in., 2 2-pr., 1 M., 4 L.	2 T.	120
Westcott	Denny	1918										
Walker	Denny	1918										
Warwick	Hawthorn Leslie	1918										
Watchman ..	Brown	1918										
Winchelsea ..	J. S. White ..	1918										
Vanessa	Beardmore ..	1918										
† Vanity	"	1918										
Vidette	Stephen	1918										
<i>Vimy (late Van-couver)</i>												
	Beardmore ..	1918								4 4-in., 1 2 pr., 1 M., 4 L.	1 T. 1 D.	
Vanoc	Brown	1917								4 4-in., 1 2-pr., 1 M., 4 L.	3	
Vanquisher ..	"	1917	312	29½	10½	2	1090	27,000	34	4 4-in., 1 2-pr., 1 M., 4 L.	2 T. 1 T., 1 D.	
Velox	"	1918										
† Verdon	Hawthorn Leslie	1917										
Versatile	"	1918										
Vesper	Stephen	1918								4 4-in., 1 2-pr., 1 M., 4 L.	2 T. 1 T.	
Vivacious ..	Yarrow	1917								1 M., 4 L.	1 D.	
<i>Thornycroft "V" Class :</i>												
Witch	{ Thornycroft Devonport }	1924	312	30½	10·9	2	1140	30,000	35	4 4·7-in., 2 2-pr., 1 M., 4 L.	2 T.	130
Wishart	Thornycroft ..	1920										
Viceroy	"	1918										
Viscount	"	1918								4 4-in., 1 2-pr., 1 M., 4 L.	2 T.	120

Torpedo tubes : D. = double. T. = triple.

† Escort vessels armed with 4-in. guns.

BRITISH FLOTILLAS.
Great Britain—continued.

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Name or Number.	Built by.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement (War).
			Length (Extreme).	Beam.	Draught.							
			Feet.	Feet.	Feet.		Tons.		Knots			
DESTROYERS—												
<i>Admiralty "R" Class</i>												
Skate	Brown	1917	276— 276½	26½	10½	2	900	27,000	36	{ 3 4-in., 1 2-pr., 1 M., 4 L.	2 D. 21"	98
<i>Hunt Class :</i>												
Atherstone	Cammell Laird	1940										
Alredale												
Albrighton												
Aldenham												
Avon Vale												
Badsworth												
Beaufort												
Belvoir												
Bicester												
Blankney												
Bleasdale												
Blencathra												
Bramham												
Brecon												
Brocklesby												
Calpe												
Catterick	Yarrow	1940										
Catstock												
Chiddingfold	Yarrow	1940										
Cleveland	Yarrow	1940										
Cotswold	Yarrow	1940										
Cottesmore	Yarrow	1940										
Cowdray												
Crume												
Derwent												
Dulverton												
Easton	Vickers-Armstrong	1940										
Eglington												
Eggesford												
Erldge												
Exdale												
Exmoor												
Farnale	Swan Hunter	1940	..	..	..	2	..	19,000	27½	4 4-in. H.A.	..	..
Ferne	Glydebank	1940										
Garth	"	1940										
Goethland												
Grove												
Haldon												
Hambledon	Swan Hunter	1940										
Hatherleigh												
Haydon												
Holcombe												
Holderness	Swan Hunter	1940										
Hurley												
Hurworth												
Lamerton												
Lauderdale												
Ledbury												
Liddesdale												
Limbourne												
Melbreak												
Mendip	Swan Hunter	1940										
Meynell	"	1940										
Middleton												
Modbury												
Oakley												
Puckeridge												
Pytchley	Scotts	1940										
Quantock	"	1940										
Quorn	White	1940										
Rockwood												
Southdown	White	1940										
Stevenstowe												
Talybont												
Tanatside												
Tetcott												
Tynedale	Stephen	1940										
Wensleydale												
Whaddon	Stephen	1940										
Wheatland												
Wilton												
Zetland												

Great Britain—*continued.*

Name or Number.	Built by.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement (War).	Fuel. Oil.
			Length (Extreme.)	Beam.	Draught.								
			Ft.	Ft.	Ft.		Tons.		Knots.				
DESTROYERS—													
<i>Town Class (ex U.S.N.):</i>													
Churchill (ex-Herndon) ..	Newport News S.B. Co. ..	1919-1920	314'4"	31'	9'8"	2	1,190	25,000	35	4 4-in., 1 3-in. A.A.	4 Trip. 21-in.	122	375
Chesterfield (ex-Wood) ..													
Clare (ex-Upshur) ..													
Beverley (ex-Branch) ..													
Broadway (ex-Hunt) ..													
Burnham (ex-Alden) ..													
Cameron (ex-Welles) ..	Bethlehem S.B. 6	1919	314'4"	31'	9'8"	2	1,190	27,000	35	4 4-in., 1 3-in. A.A.	4 Trip. 21-in.	122	375
Bradford (ex-McLanahan)													
Burwell (ex-Laub) ..													
Buxton (ex-Edwards) ..													
Sherwood (ex-Rodgers) ..													
Ramsey (ex-Meade) ..													
Reading (ex-Bailey) ..													
Ripley (ex-Shubrick) ..													
Rockingham (ex-Swasey)													
*St. Croix (ex-McCook) ..													
*St. Francis (ex-Bancroft)													
Caldwell (ex-Hale) ..	Bath I.W.	1919-1921	314'4"	31'	9'5"	2	1,090	24,000	35	4 4-in., 1 3-in. A.A.	4 Trip. 21-in.	122	286
Castleton (ex-A. Ward) ..													
Lancaster (ex-Philip) ..													
Mansfield (ex-Evans) ..													
Montgomery (ex-Wickes)													
Wells (ex-Tillman) ..	Mare Island Union I.W. ...	1918-1919	314'4"	31'	9'5"	2	1,090	24,000	35	4 4-in., 1 3-in. A.A.	4 Trip. 21-in.	122	286
Salisbury (ex-Claxton) ..													
Richmond (ex-Fairfax) ..													
Leamington (ex-Twiggs) ..													
Lincoln (ex-Yarnall) ..	Cramp ..	1918	314'4"	31'	9'5"	2	1,090	24,000	35	4 4-in., 1 3-in. A.A.	4 Trip. 21-in.	122	286
*Hamilton (ex-Kalk) ..	Fore River S.B. Co.	1918-1920	314'4"	31'	9'8"	2	1,060	27,000	35	4 4-in., 1 3-in. A.A.	4 Trip. 21-in.	122	283
Georgetown (ex-Maddox)													
Brighton (ex-Cowell) ..													
Roxborough (ex-Foote) ..													
Newport (ex-Sigourney) ..													
*Niagara (ex-Thatcher) ..	Newport News S.B. 6.	1918-1920	314'4"	31'	9'8"	2	1,060	27,000	35	4 4-in., 1 3-in. A.A.	4 Trip. 21-in.	122	283
Charlestown (ex-Abbot) ..													
St. Albans (ex-Thomas) ..													
St. Mary's (ex-Doran) ..	Union I.W.	1918-1920	314'4"	31'	9'8"	2	1,060	27,000	35	4 4-in., 1 3-in. A.A.	4 Trip. 21-in.	122	283
*Columbia (ex-Haraden) ..													
Newark (ex-Ringgold) ..													
Newmarket (ex-Robinson)													
*Annapolis (ex-Mackenzie)	Union Plant	1918	315'5"	30'7"	9'5"	3	1,020	18,500	30	4 4-in., 1 3-in. A.A.	4 Trip. 21-in.	122	260
*St. Clair (ex-Williams) ..													
Leeds (ex-Connor) ..	Cramp	1918	315'5"	30'7"	9'5"	3	1,020	18,500	30	4 4-in., 1 3-in. A.A.	4 Trip. 21-in.	122	260
Ludlow (ex-Stockton) ..													
Lewes (ex-Conway) ..													

* Royal Canadian Navy.

BRITISH FLOTILLAS.
Great Britain—continued.

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SUBMARINES.

Name or Number.	Where Built.	Completed.	Dimensions.			No. of Screws.	Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement (War).				
			Length (Extreme).	Beam.	Draught.											
			Feet.	Feet.	Feet.		Tons.		Knots.							
P31																
<i>Unity Class :</i>																
Utmost ..	Vickers ..	1938	180	16-1	12-9	..	540	615	11½	2 small guns	6	27				
Ursula ..							730	825	10							
Upright ..																
<i>Triton Class :</i>																
Torbay ..	Chatham ..	1940	265	26½	12	..	1,090	4-in.				
Thunderbolt (ex-Thetis) ..	Cammell Laird	1939					1,575	..	..					
Triumph ..							1,090	2,500	15½	1 4-in. gun	6	53				
Trident ..							1,575	1,450	9							
Tribune ..	Cammell Laird	Bldg.														
Taku ..	Vickers ..	1939														
Truant ..	Scott's ..	Bldg.														
Tuna ..	Chatham															
Tigris ..																
Thrasher ..																
Turbulent ..																
Traveller ..																
Trusty ..																
Tempest ..																
Thorn ..																
<i>Thames Class :</i>																
Seyn ..	Vickers-Armstrong	1935	345	28	13-7	2	1,850	10,000	22½	1 4-in., 2 smaller	..	60				
Clyde ..							2,723	2,500	10							
<i>Porpoise Class : *</i>																
Porpoise ..	Vickers-Armstrong	1933	289	29-8	13-8	..	1,500	3,300	15	1 4-in., 2 smaller	6	55				
							2,063	1,630	8½							
Rorqual ..	Vickers ..	1935	271½	25½	15	2	1,520	3,300	15½	1 4-in., 2 smaller	6	55				
							2,157	1,630	8½							
<i>Swordfish Class :</i>																
Sunfish ..	Chatham ..	1937	208-7	24	10-5	2	670	1,550	13½	3-in., 1 smaller	6	40				
Seawolf ..	Scott's ..	1934					960	1,300	10							
Sealion ..	Cammell Laird ..	1938					640	1,550	13½							
Sturgeon ..	Chatham ..	1933					927	1,300	10							
<i>Rainbow Class :</i>																
Regent ..	Vickers-Armstrong	1930	290	29-8	13-8	2	1,475	4,400	17½	1 4-in., 2 smaller	8	53				
Rover ..		1931					2,035	1,320	9							
<i>Parthian Class :</i>																
Parthian ..	Chatham ..	1931	290	29-8	13-7	..	1,475	2,040	17½	1 4-in., 2 smaller	8	53				
Proteus ..	Vickers-Armstrong	1930					1,475									
Pandora ..																
<i>Odin Class :</i>																
Osiris ..	Vickers ..	1929	283½	29-8	13-7	..	1,475	4,400	17½	1 4-in., 2 Lewis	8	53				
Otus ..	Vickers ..	1929					2,038	1,320	9							
<i>Oberon Class :</i>																
Oberon ..	Chatham ..	1927	270	28	13-2	..	1,311	2,950	15	1 4-in., 2 Lewis	8	53				
							1,830	1,350	9							
Otway ..	Vickers ..	1927	275	27-7	13-3	..	1,354	3,000	15½	1 4-in., 2 Lewis	8	93				
							1,872	1,350	9							
<i>L Class :</i>																
L27 ..	Vickers ..	1926	238½	23½	11-7	..	760	2,400	17½	1 4-in., 1 Lewis	4	41				
L26 ..	Vickers ..	1926					1,080	1,600	10½							
L23 ..	Vickers ..	1924														
<i>H Class :</i>																
H50 ..	Beardmore ..	1920	171	15-75	12-5	2	410	490	13	1 Lewis	4	23				
H44 ..	Armstrong ..	1920					500	320	10½							
H43 ..	Armstrong ..	1919														
H34 ..	Cammell Laird ..	1919														
H33 ..	Cammell Laird ..	1919														
H32 ..	Vickers ..	1919														
H28 ..	Vickers ..	1918														

* Minelaying submarines.

Great Britain—continued.

Name.	Displacement.	Length (Extreme).	Beam (Extreme).	Draught.	Horse Power.	Where built.	Maker of Machinery.	Date of Launch.	Date of Completion.	Armament.	Speed (knots).	Complement.
SLOOPs.		ft. ins.	ft. ins.	ft. ins.								
Wren . . .	1250	..	..	..	4,300	Furness	Richardson	..	1942			
Erne . . .							Westgarth		1941	6 4-in. H.A.		
Ibis . . .										10 smaller		
Egret . . .	1200	282	37 6	8 4	3,600	J. S. White	J. S. White	1937	1938			
Auckland . . .						Denny	Denny	1937	1938	8 4-in., 5 smaller	19½	
Pelican . . .						Thornycroft	Thornycroft	1937	1938			
Black . . .								1938	1939			
Swan . . .	1250	..	..	..	4,300	Yarrow	Yarrow	1939	1940	6 4-in. H.A.	19½	
Flamingo . . .										10 smaller		
Enchantress . . .	1085	282	37 0	8 6	3,300	J. Brown	J. Brown	1934	1935	4 4-7-in. guns and 2 on deposit	18½	125
										4 3-pr.		
Stork . . .	1100	282	37 0	8 6	3,300	Denny	Denny	1936	1936	6 4-7-in. guns 5 smaller	18½	..
CORVETTES.												
<i>Flower Class :</i>												
Abella . . .												
Allama . . .												
Amaranthus . . .												
Anchusa . . .												
Anemone . . .												
Arabia . . .												
Armeria . . .												
Ashphodel . . .												
Aster . . .												
Aubretia . . .												
Azalea . . .												
Balsam . . .												
Bellwort . . .												
Bergamot . . .												
Bluebell . . .												
Borage . . .												
Bryony . . .												
Burdock . . .												
Buttercup . . .												
Calendula . . .												
Camellia . . .												
Campion . . .												
Carnation . . .												
Celandine . . .												
Chrysanthemum . . .												
Clarkia . . .												
Clematis . . .												
Clover . . .												
Coltsfoot . . .												
Columbine . . .												
Convolvulus . . .												
Coreopsis . . .												
Cowslip . . .												
Crocus . . .												
Cyclamen . . .										1 4-in. 1 M.P.P.	..	58
Dahlia . . .												
Delphinium . . .												
Dianella . . .												
Dianthus . . .												
Erica . . .												
Eyebright . . .												
Freesia . . .												
Fritillary . . .												
Gardenia . . .												
Genista . . .												
Gentian . . .												
Geranium . . .												
Gloxinia . . .												
Harbell . . .												
Heartsease . . .												
Heather . . .												
Hemlock . . .												
Hibiscus . . .												
Honey-suckle . . .												
Hyacinth . . .												
Hydrangea . . .												
Ivy . . .												
Jasmine . . .												
Jonquil . . .												
Kingcup . . .												
Lavender . . .												
Lily . . .												
Ling . . .												
Loosestrife . . .												
Lotus . . .												
Mallow . . .												
Marguerite . . .												

Great Britain—continued.

Name.	Displacement.	Length (Extreme).	Beam (Extreme).	Draught	Horse-Power.	Where built.	Maker of Machinery.	Date of Launch.	Date of Completion.	Armament.	Speed (knots).	Complement.			
CORVETTES.		ft. ins.	ft. ins.	ft. ins.											
<i>Flower Class.</i>															
Marigold.	}	Philip									
Marjoram															
Meadow-sweet															
Mignonette															
Monkshood															
Myosotis.															
Narcissus															
Nasturtium															
Nigella .															
Orchis .															
Oxlip. .															
Pennywort															
Penistemon															
Peony .															
Petunia .															
Phlox .															
Pimpernell															
Pink . .															
Polyanthus															
Poppy .															
Primrose.															
Primula .															
Rhododendron															
Rock Rose	}	Smith's Dock		1 4-in. 1 m.pp.	..	58			
Rose. .															
Samphire															
Saxifrage															
Snapdragon															
Snowdrop															
Snowflake															
Spiraea .															
Starwort.															
Stonecrop															
Sunflower															
Sweetbriar															
Thyme .															
Tulip. .															
Verbena .															
Vervain .															
Vetch .															
Violet .															
Wallflower															
Woodruff															
<i>Canadian :</i>															
Chambly.	}	1940-41							
Moose-saw, etc.															
80 in No.															
Kia-fisher															
Mallard .															
Patn .															
Sheldrake															
Kittiwake															
Widgeon.															
Guillemot															
Shear-water	}	580	J. S. White	J. S. White	..	1939						
P.C.74 .															
	610	247	26 9	8 0	3,500	J. S. White	J. S. White	1918	1918	1 12-pr.	20	..			
SLOOPs.															
Leith. .	}	990	266	36 0	2,000	Devonport	J. S. White	1933	1934	2 4-7-in.guns, 1 4-in. 12 smaller	16½	100			
Lowestoft						Devonport		1933	1934						
Welling-ton						Devonport		1935	1935						
London-derry						Devonport		1934	1935						
Deptford						Chatham									
Aberdeen	}	990	Devonport	Thornycroft	1935	1935	{ 3 4-in. 12 smaller 4 4-in. 12 smaller }	16½	100			
Fleetwood						Devonport		1935							
CUTTERS (ex-U.S.N.).															
Banff (ex-Saranac)	}	1900	250	42 0	16 0	3,000	1929-1932	..	16	..		
Fishward (ex-Tahoe)															
Gorleston (ex-Itasca)															

Great Britain—continued.

Name.	Displacement.	Length (Extreme).	Beam (Extreme).	Draught.	Horse-Power.	Where built.	Maker of Machinery.	Date of Launch.	Date of Complement.	Armament.	Speed (knots).	Complement.
CUTTERS (ex-U.S.N.)		ft. ins.	ft. ins.	ft. ins.								
Harland (ex-Port-chartrain)												
Land-guard (ex-Sho-shone)												
Lulworth (ex-Chelan)	1900	250	42 0	16 0	3,000	..	..	..	1929-1932	..	16	..
Sennen (ex-Champ-plain)												
Totland (ex-Cayuga)												
Walney (ex-Siebag)												
MINE-SWEEPERS.												
60 in No.												
<i>Algerine Class:</i>												
Acute .												
Alarm .												
Albacore .												
Algerine .												
Cadmus .												
Circe .												
Cockatrice												
Espiegle .												
Fantome .												
Fly .												
Mutine .												
Onyx .												
Rattler .												
Read .												
Rinaldo .												
Rosario .												
Spanker .												
Vestal .												
<i>Bangor Class:</i>												
Bangor .						Harland & Wolff						
Blackpool						Denny						
Bridlington						Blyth						
Bridport .						Ailsa						
Blyth .						Blyth						
Beaumaris						Hamilton						
Boston .						Blyth						
Cromarty						Hamilton						
Dunbar .						Blyth						
Ilfracombe						Hamilton						
Llandudno						Blyth						
Peterhead						Ailsa						
Polruan .						Lochnitz						
Rye .						Hamilton						
Rhyl .						Robb						
Romney .						Hamilton						
Rothsay												
Sidmouth												
Stornoway												
Tenby .												
60 in No.	..	..	..	..	..	Building in Canada	..	1941-2				
<i>Halcyon Class:</i>												
Halcyon .						J. Brown	J. Brown	1934	1934			
Harrier .						Thornycroft	Thornycroft	1934	1934			
Hussar .	815	246	33 6	7 3	1,770	Thornycroft	Thornycroft	1934	1934	2 4-in.	17	80
Speedwell						Hamilton	Beardmore	1935	1935	5 smaller		
Salamander	815	246	33 6	7 7	2,000	J. S. White	J. S. White	1935	1935	2 4-in.	17	
										9 smaller		
Hebe .	..	..	..	..	..	Devonport	..	1936	1937			
Sharp-shooter	..	..	..	..	..	Devonport	..	1936	1937	2 4-in.	..	
Hazard .	..	..	..	..	..	Wm. Gray	..	1936	1937	5 smaller		
Gleaner .	..	..	..	..	..	Wm. Gray	..	1937	1938			

Great Britain—*continued.*

MINESWEEPERS AND SLOOPs

Name.	Displacement.	Length (Extreme).	Beam (Extreme).	Draught.	Horse-Power.	Where Built.	Maker of Machinery.	Date of Launch.	Date of Completion.	Armament.	Speed (knots).	Complement.
		ft. ins.	ft. ins.	ft. ins.								
<i>Halcyon</i> Class—cont. Seagull	815	230 b.p.	33 6	7 0	1,750	Devonport	Richardsons, Westgarth	1937	1938	2 4-in. H.A. 5 smaller	17	
Franklin	830					Ailsa	Thornycroft	1937	1938	..	17	
Jason .	..					Ailsa	Thornycroft	1937	8938	..		
Scott .	..					Caledon	Parsons					
Bramble	875					Devonport	Barclay Curle	1938	1939	2 4-in., H.A. 5 smaller	17	..
Britomart						Devonport	Barclay Curle					
Speedy .						J. Hamilton	J. S. White					
<i>Sloops</i> <i>Shoreham</i> Class : <i>Repeat Shore-</i> <i>ham Class :</i> Falmouth.												
Millford .	1060	281 4	35 0	8 3	2,000 P.T. (G.)	Devonport	Hawthorn Leslie Yarrow Yarrow	1932	1932 1933	2 4-in., A.A. 4 3-pr. 8 L.	16½	100
Weston .												
Bideford .	1105	281 4	35 0	8 0	2,000 P.T. (G.)	Devonport	J. S. White & Devonport	1931	1931	1 4-in., 1 4-in. A.A. 4 3-pr. 8 L. Fowey 2 4-in. H.A. 13 smaller guns	16½	100
Rochester .						Chatham	J. S. White & Chatham	1932	1932			
Fowey .						Devonport	J. S. White & Devonport	1930	1931			
Shoreham .						Chatham	J. S. White & Chatham	1930	1931			
<i>Hastings</i> Class : Hastings . Folkestone Scar- borough	1025	266 4	34 1	9 1	2,000 P.T. (G.)	Devonport Swan, Hunter Swan, Hunter	Devonport Hawthorn, Leslie Hawthorn, Leslie	1930	1931	1 4-in., 1 4-in. A.A. 2 3-pr. 8 L. Hastings 2 4-in., 9 smaller	16½	..
	1045							1930	1930			
<i>Bridgewater</i> Class : Bridgewater Sandwich	1045	266 4	34 0	8 6	2,000 { P.T. (G.)	Hawthorn Leslie	Hawthorn Leslie	1928	1929	2 4-in. A.A. Bridgewater 10 smaller, Sand- wich 11 smaller	16½	95
<i>Arabis Class :</i> Lupin Rosemary	1175	267 9	33 6	12 0	2,000 recip	Richardson Duck	Blair	1915	1916	1 4-in., 2 3-pr. 2 M., 8 L.	16 -17	100
<i>Acacia Class :</i> Foxglove .	1165	262 6	33 0	12 6	1,800 recip.	Dunlop Bremner	Dunlop Bremner	1915	1915	2 4-in., 4 3-pr. 2 3-pr., 8 L.	16-17	100

Great Britain—*continued.*

MINESWEEPERS, RIVER GUNBOATS.

Name.	Displacement.	Length (Extreme).	Beam (Extreme).	Draught.	Horse-Power.	Where built.	Maker of Machinery.	Date of Launch.	Date of Completion.	Armament.	Speed (knots).	Complement.
		ft. ins.	ft. ins.	ft. ins.								
MINESWEEPERS												
Aberdare .						Alisa	Alisa	1918	1918			
Albury .						Alisa	Alisa	1918	1919			
Alresford .						Alisa	W. H. Allen	1919	1919			
Bagshot .						Ardrossan Dry Dock Co.	W. H. Allen	1918	1919			
Derby .						Clyde S. B. Co.	Clyde S. B. Co.	1918	1918			
Fermoy .						Dundee	Cooper & Greig	1919	1919			
Fareham .						Dunlop	Dunlop	1918	1918			
Elgin .						Bremner	Bremner					
Sutton .						Simons	Simons	1918	1918			
Saltash .						McMillan	Yarrow					
	710	231 0	28 7	9 0	2,200 recip.	Murdock & Murray Do.	Do.	1918	1919			
Saltburn .						Do.	D. Rowan	1918	1919			
Selkirk .						Lobnitz	Lobnitz	1919	1919			
Ross .						Napier	Rowan	1918	1918			
Widnes .						Eltringham	Wallend	1918	1918			
Harrow .							Shipway					
Lydd .						Fairfield	Fairfield	1918	1919			
Stoke .						Rennoldson	Shields	1918	1918			
Pangbourne .						Lobnitz	Lobnitz					
Tedworth .	675	231 0	28 0	9 0	1,800 recip.	Simons	Simons	1917	1917	1 3-in. A.A.	16	35
Kellett .	800	231 0	28 7	7 6	2,200 recip.	Simons	Simons	1919	1919	1 3-pr.	16	86
AUSTRALIAN MINESWEEPERS.												
Number uncertain	..	..	..	..	..	..	..	Bldg.				
CANADIAN MINESWEEPERS.												
60 in No. 12 special type	..	..	..	..	..	..	..	Bldg. Bldg.				
RIVER GUN- BOATS.												
Scorpion .	700	208 9	34 8	5 5	4,500	J. S. White	White	1937	1938	2 4-in.; 1 5-7-in. Howitzer, 12 smaller	17	..
Locust .	585					Yarrow	Yarrow	Bldg.				
Aphis .						Alisa	Alisa	1915	1915	2 6-in., 1 3-in. A.A., 1 2-pr., 8 L.		
Cockchafer						Barclay	Barclay	1915	1916	2 6-in., 1 3-in. A.A., 8 L.		
Gnat .						Curle	Curle	1915	1915	2 6-in., 1 3-in. A.A., 8 L.		
Cricket .	625	237 6	36 0	4 6	2,000 recip.	Lobnitz	Lobnitz	1915	1915	2 6-in., 1 3-in. A.A., 1 2-pr., 8 L.	14	55
Scarab .						Lobnitz	Lobnitz	1915	1915			
						Wood, Skin- ner	N.E. Marine	1915	1915	2 6-in., 1 3-in. A.A., 1 2-pr., 8 L.		
Tarantula						Wood Skin- ner	N.E. Marine	1915	1916	1 6-in., 1 3-in. A.A., 1 2-pr., 8 L.		

Argentine Republic.

Name or Number.	Where Built.	Launched	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.									Oil
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons
FLOTILLA LEADERS—													
Cervantes (ex-Spanish Churrua)	Cartagena ..	1925	318	31½	10½	2	1522	42,000	36	5 4-7 in., 1 3-in. A.A., 4 M.	2 triple 21-in.	160	540
Juan de Garay (ex-Spanish Alcala Galiano)													
Mendoza ..	J. S. White, Cowan	1928	335	31-8	12½	2	1466	45,000	36 (La Rioja 39-4 t.)	5 4-7 in., 1 3-in. A.A., 2 2-pr., 4 M.	2 triple 21-in.	160	700
La Rioja ..		1929											
Tucuman ..		1929											
DESTROYERS—													
Catamarca ..	Schichau ..	1911	288-7	27½	10	2	972	28,000	32	3 4-in. 2 1-pr.	4 21-in.	100	220
Jujuy ..	Germania ..	1910	295½	29-5	10	2	1000	28,000	34-7 t.				
Cordoba ..	Shichau ..	1911											
La Plata ..	Germania ..	1911	323	33	8½	2	1350	34,000	35½	4 4-7 in., 8 smaller	2Q 21-in.	150	450
San Juan ..	J. Brown ..	1937											
San Luis ..	Laird	1937	323	33	8½	2	1350	34,000	35½	4 4-7 in., 8 smaller	2Q 21-in.	170	450
Misiones ..														Cammell
Santa Cruz ..	Vickers, Barrow	1937	323	33	8½	2	1350	34,000	35½	4 4-7 in., 8 smaller	2Q 21-in.	160	450
Buenos Aires ..													
Entre Rios ..													
SUBMARINES—													
Santa Fe ..	Taranto ..	1931	226½	21½	13	2	850	3,000	17-6 9	1 4-7-in. 1 2-pr. A.A.	8 21-in.	41	—
Salta ..		1932											
Santiago del Estero		1933											

Torpedo tubes : Q = quadruple.

Brazil.

Name or Number.	Where Built.	Launched	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—													
Amazonas ..	Rio de Janeiro	Bldg.	360½ w.l.	34½	9 10	2	1500	48,000	36 5	5 5-in. 4 M. A.A.	3 21-in. (Q)	190	500
Araguaia ..													
Acre ..													
Ajuricaba ..													
Apa ..													
Araguari ..													
Greenhalgh ..													
Marcillo Dias ..													
Maria E. Barros													
Plauky ..													
Matto Grosso ..													
† Paraiba ..	Yarrow ..	1909	240	23-6	7-5	2	560	8,000	27 (27-1- 28-7 on trials)	2 4-in., 4 3 prs.	2 18-in.	76	140 (—)
Rio Grande do Norte		1909											
Santa Catarina ..		1909											
Sergipe ..		1909											
Maranhao (ex-Porto)	Thornycroft ..	1913	265-3	26-5	10	2	934	22,500	31	3 4-in., 1 2-pr.	2 21-in. (D.)	100	250
SUBMARINES—													
Humaita ..	Spezia (Ansaldo Fiat)	1927	282	25-6	14	2	1450	4,800	18-5	14-7-in. A.A.; 4 M., 20 mines	6 21-in.	55	140
Tamola ..							1884	2,200	10				
Tymbira ..	Spezia (Orlando)	1937	197½	21	14½	2	620	1350	14	1 3-9-in. 2 M. A.A.	6 21-in.	33	..
Tupi ..							855	800	5				

† Training Ship.

Chile.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								Coal Oil
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—													
Serrano	Thornycroft's	1928	300	29	9	2	1090	28,000	35	3 4-7-in., 1 3-in.	2 triple 21-in.	130	—
Orella													348
Riquelme													
Hyatt													
Videla													
Aldea	White... ..	{ 1912 1913	330 p.p.	32-6	11-1	3	1850	30,000	31	6 4-in. 4 M.	4 18-in.	190	427 80
Almirante Lynch.													
Almirante Condell													
SUBMARINES—													
Capitan Thompson	Vickers Arm- strong's	1929	275	27-6	14-8	2	1529	2750	15	1 4-in.	8 21-in.	54	200
Almirante Simpson		1929					1990	1300	9				
Capitan O'Brien ..		1929											
H 1, Gualeolda ..	Fore River, U.S.A.	1915	150-3	15-75	12-3	2	255	480	13	..	4 18-in.	22	— 17-5
H 2, Tegusilda ..							470	640	11				
H 3, Eucumilla ..													
H 4, Guale													
H 5, Quidora													
H 6, Fresia													

3 submarines are projected.

Denmark.*

Name or Number.	Where built.	Launched.	Dimensions.			Number of Screws.	Displacement	Horse-Power.	Speed.	Armament.	Torpedo Tubes	Complement.	Fuel.
			Length (Extreme).	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
TORPEDO BOATS.													
FIRST CLASS—													
T4. Glenten ..	Royal Dockyard, Copenhagen	1934	198-9	19-5	7-8	2	285	6,000	27½	2 3-4-in., 2-78 M., 2 M.	6 17-7 in.	51	— 40
T5. Hogen ..		1930	198-9	19-5	7-4	2	281	6,000	27½	2 3-in., 2-78 M., 2 M.	8 17-7 in.	51	— 26
T6. Ornen ..		1929											
T3. Laxen ..		1930											
T1. Dragen ..		1919											
T2. Hvalen ..		1919											
R4. Havkatten †		1919											
R5. Sælen †		1918											
R3. Nordkaperen †		1918											
R2. Makrelen †		1917	126-3	13-9	9	2	110	2,000	24-6t.	2 6-pr. A.A.	2 (1 in R2- 4)	24	15 —
S6. Narhvalen †		1917	148-2	16-9	7-5	2	158	3,480	26-2t.	1 3-in., 1 M.	18 in.	34	29 —
S5. Havhesten †		1917											
S4. Söhunden †		1917											
S2. Støren †		1916											
S1. Springeren †		1913	126-3	15	9	2	110	2,000	24-3	2 6-pr. A.A.	1 18 in.	24	15 —
P1. Hvalrossen †		1911											
S3. Sørlidderen †	Yarrow & Co.	1911	126-3	15	9	2	110	2,000	24-3	2 6-pr. A.A.	1 18 in.	24	15 —
Two in number ..	Copenhagen	Bldg.	279	27-4	8	2	700	21,000	35	2 4-in. 4 1-5-in.	6 21 in.	..	..
SUBMARINES—													
Daphne. D1 ..	Royal Dockyard, Copenhagen	1926	161	16	8-2		305	900	13-4	1 3-in. A.A., 1-78 M.	6 18 in.	25	— 16
Dryaden. D2 ..							380	400	7				
Flora. C3 ..	"	1919	155-7	15-7	9		301	900	14-5	1 6-pr. }	5 18 in.	24	— 13
Bellona. C2 ..							369	640	10-5				
Rota. C1 §	"	"	133-3	13-4	8	2	181	450	13-5	1 6-pr.	3 18 in.	14	— 9
Galathea. B12 ..	"	"					231	340	9-8				
Triton. B10 ..	"	1914											
Ran. B9 ..	"	1915											
Havkalen. E3 ..	"	1937	155-6	15-3	9-4	2	320	600	15	2 1-5-in.	5 18 in.	20	..
Havfruen. E2 ..	"	1937					420	220	8				
Havmanden. E1	"	1936											
Havhornen ..	"	Bldg.											

* Under the control of Germany.

† Used as minesweepers.

‡ Used as patrol vessels.

§ Rota has one deck tube in addition.

France.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								
FLOTILLA LEADERS—													
Volta	Ch. de Bretagne, Nantes	1936	Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Mogador	Lorient.. ..	1937	451	41'1	15	2	2,884	92,000	34	{ 8 5'4-in., 2 1'5-in. A.A.	10 21'7-in.	240	630
Le Fantasque	Lorient.. ..	1934	434½	39½	14	2	2,569	74,000	37	{ 5 5'4-in., 4 1'5-in. A.A.	3 21'7-in. (r)	220	650
L'Audacieux	Ch. de la Méditerranée												
Le Mallin	Ch. de France	1934											
L'Indomptable	Ch. Naval Français												
Le Triomphant *	Dunkerque	1932											
Le Terrible	Nantes ..	1931	424½	39	14	2	2,441	64,000	36	{ 5 5'4-in., 4 1'5-in. A.A.	7 21'7-in.	220	650
Vauquelin	Nantes ..	1932											
Kersaint	Nantes ..	1931											
Cassard	Dunkerque												
Tartu	Havre.. ..	1930	423	40	14	2	2,441	64,000	36	{ 5 5'4-in., 4 1'5-in. A.A.	6 21'7-in.	220	650
Aigle	St. Nazaire												
Vantour	Nantes ..												
Albatros	Lorient ..	1930	423	40	14	2	2,441	68,000	37	{ 5 5'4-in., 4 1'5-in. A.A.	7 21'7-in.	220	650
Gerfaut	Penhoet ..												
Milan	St. Nazaire	1928											
Epervier	St. Nazaire	1928											
Valmy	Dunkerque	1930	427	39	15	2	2,436	64,000	36	{ 5 5'4-in., 4 1'5-in. A.A.	2 21'7-in.	207	650
Verdun	Dunkerque	1929											
Vauban	Lorient ..	1928											
Lion	St. Nazaire..	1924											
Guépard	St. Nazaire..	1925	416	37½	17½	2	2,126	55,000	35'5	5 5'1-in.	2 21'7-in.	206	530
Leopard	Nantes ..	1924											
Lynx	Lorient ..	1926											
Tigre													
Panthere													
DESTROYERS—													
L'Aventurier	Bordeaux ..	Bldg.	363½	36½	10½	2	1,772	58,000	37	6 5'1-in., 2 1'5-in.	7 21'7-in.	175	480
L'Opiniâtre	La Seyne ..												
L'Intrepide	Loire												
Le Temeraire													
Le Hardi	Loire												
Mameluck													
Adroit ex-Epée	Gironde ..	1938											
L'Esquenet													
Casque													
Foudroyant													
ex-Fleuret	La Seyne ..	1940											
Siroco ex-Corsaire													
Bison ex-Le Flibustier		1940											
Forbin	Havre.. ..	1928											
Frondeur	Caen	1929											
Fougueux	Nantes ..	1928											
Basque	Maritime ..	1929											
Bordelais	Bordeaux ..	1928											
Boulonnais	Caen	1927	351'7	32'2	10'2	2	1,378	31,000	33	{ 4 5'1-in., 2 1'5-in. A.A.	2 21'7-in. (r)	146	360
Brestois	Nantes ..	1927											
L'Alcyon	Bordeaux ..	1927											
Le Fortune	Caen	1926											
Le Mars	Caen												
La Palme	Nantes ..												
Mistral *	Havre ..	1925											
Ouragon *	Caen	1924											
Simoun	St. Nazaire..	1924											
Tempête	Nantes ..	1925											
Tramontane	Bordeaux ..	1924	347	33'0	13'9	2	1,319	33,000	33	{ 4 5'1-in., 2 1'5-in. A.A.	2 21'7-in. (r)	138	300
Trombe	Harfleur ..	1925											
Typhon	Bordeaux ..	1925											
Tornado	Bordeaux ..	1925											
L'Asile													
Le Fier													
L'Entreprenant													
Le Farouche	Nantes ..	Bldg.	295½	36½	8½	2	994	28,000	34	4 3'9-in.	4		
L'Alsacien													
Le Corse													
Le Breton													

* Operated by the Allies.

France—continued.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
TORPEDO BOATS—													
La Melpomène *	Nantes ..	1935	264·9	26·0	9·2	2	610	22,000	34·5	{ 2 3·9-in., 4 M. A.A. }	1 21·7-in. (1)	131	90
La Pomone ..													
La Flore * ..													
L'iphigénie ..													
Bombarde ..	Nantes ..	1936											
Bouclier ..	Le Trait ..	1937											
La Bayonnaise ..	Bordeaux ..	1936											
La Pourcuisante ..	Dunkerque ..	1936											
La Cordelière * ..	Normand ..	1936											
L'Incomprise * ..	Le Trait ..	1937											
Baliste ..	Dunkerque ..	1937											

1st CLASS SUBMARINES								Surf. Sub. 1806 2109	Surf. Sub. 12,000 —	Surf. Sub. 21 —												
La Martinique	Cherbourg ..	Bdg.	325½	27½	14	2½					1 3·9-in.	..	.. ..							
Sidi-Ferruch	Brest ..	1937	302·8	27	16	2	1379 2060	8000 2000	18 10	1 3·9-in., 1 1·6-in. A.A.	11	63	..									
Casablanca *	{ Ch. de la	1935																				
Le Glorieux	Loire ..	1932																				
Le Centaure	Cherbourg ..	1932																				
Le Conquerant	Brest ..	1933																				
Le Tonnant	Loire ..	1934																				
L'Espoir	Cherbourg ..	1931																				
Protée	La Seyne ..	1930																				
Pégase	St. Nazaire ..																					
Acheron	St. Nazaire ..																					
Argo	Nantes ..	1929	301·8	27	16	2	1379 2060	6000 2000	17 10	1 3·9-in., 1 1·6-in. A.A.	11	61	96									
Acteon		1930																				
Pascal																						
Pasteur	Brest						1379 2060	6000 2000	17 10	1 3·9-in., 1 1·6-in. A.A.	11	61	96									
Henri Poincaré	Lorient	1928	302·5	27	16	2	1379 2060	6000 2000	17 10	1 3·9-in., 1 1·6-in. A.A.	11	61	96									
Archimède	Caen	1929																				
Fresnel	St. Nazaire ..																					
Redoubtable	Cherbourg ..	1928	302·5	27	16	½	1384 2080	6008 2000	17 10	1 3·9-in. A.A. 1 1-pr. A.A.	11	63	96									
Vengeur		1924																				
Requin		1935																				
Morse	Cherbourg ..	1925	357½	23	17½	2	974 1415	2900 1800	16 10	1 3·9-in. A.A.	10 21·7	54	..									
Calman	1927																					
Dauphin	1926																					
Espadon	Toulon	1927																				
Marsouin *	1924																					
Phoque	Brest	1925																				

* Operated by the Allies.

France—continued.

Number and Name	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement Surf./Sub.	Horse-Power.	Speed. Surf./Sub.	Armament.	Torpedo Tubes.	Complement.	Fuel. Oil											
			Length. (Extreme.)	Beam.	Draught.																			
2ND CLASS SUBMARINES																								
L'Aurore	Toulon ..	1940	238·3	20·3	12·3	2	$\frac{893}{1170}$	3000 1400	$\frac{14·5}{9}$	1 3·9-in. 2·5 M.	9 21·7	44	..											
La Creole	Havre ..	1940																						
La Favorite	Le Trait	Bldg.																						
L'Africaine	Havre ..	Bldg.																						
L'Andromaque .. .																								
L'Arnide																								
L'Andromède .. .																								
L'Astree																								
La Clorinde .. .																								
L'Antigone .. .	Nantes																							
Ceres	Le Trait ..	1938												224	17½	13	2	$\frac{600}{800}$	1800 1120	$\frac{14}{9}$	1 3-in. 2 M.	9 21·7	48	..
Pallas	Oberbourg ..	1934																						
Minerve*	Havre ..	1935																						
Junon *	Worms	1935																						
Vénus	Dubigeon ..	1934																						
Iris	Ch. Normand. Havre	1932																						
Orphée		1931																						
Oréade		1931																						
Ondine*	Ch. Normand Worms ..	1932																						
La Psyché																								
La Sybille	Schneider	1932																						
La Vestale																								
La Sultane	Le Trait ..	1932																						
Amphitrite	Havre ..	1932																						
Antiope	Schneider ..	1930																						
Atalante	Le Trait ..	1932																						
Amazone	Havre ..	1930																						
Diane																								
Méduse	Schneider ..	1929																						
Argonaute																								
Aréthuse	Havre ..	1925																						
Ariane		1927																						
Danaë		1927																						
Eurydice		1927																						
Circé	Schneider ..	1925																						
Calypso		1926																						
Thetis		1927																						
Naïde		1925																						
Siène	St. Nazaire	1925																						
Galatée		1925																						
MINELAYING SUB-																								
MARINES—																								
Perle	Toulon	1933	216·5	23·3	13·5	2	$\frac{669}{910}$	1300 800- 1000	$\frac{12}{9}$	1 3-in., 1M., 32 mines	5 21·7	40	..											
Le Diamant		1933																						
Rubis*		1930																						
Nautilus		1928																						
Saphir		1929																						
Turquoise	Toulon ..	1929																						
Émeraude		Bldg.																						

French submarines are divided into two classes. 1st class: All vessels of 900 tons and above in the surface condition; 2nd class: All smaller vessels, including the minelayers.

* Operated by the Free French.

Germany.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Designed Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Oil
			Length. (Extreme.)	Beam.	Draught.								
DESTROYERS—													
(Z 4) Richard Beitzen	Deutsche-Werke, Kiel	1935	374	37	9½	2	1625	40,000	36	5 5-in. 4 1½-in.	2 21 in. (Q)	252	500
(Z 5) Paul Jacobi ..													
(Z 6) Theodor Riedel													
(Z 7) Hermann Schoemann													
(Z 10) Hans Lody ..													
(Z 14) Friedrich Ihn	Deschimag, Bremen	1938	385½	38½	9½	2	1811	55,000	36	5 5-in. 4 1½-in.	2 21 in. (Q)	280	..
(Z 15) Erich Steinbrinck													
(Z 16) Friedrich Eckoldt	Deschimag, Bremen	1939-42	385½	38½	9½	2	1870	55,000	36	5 5-in. 4 1½-in.	2 21 in. (Q)	280	..
Z 20 Karl Galster													
Z 23-40 Narvik Flotilla	Wilhelmshaven	1927	304	28½	8½	2	800	25,000	34	3 4½-in. 2 1-pr. A.A.	19·7 in. (T.)	125	300
*Itlis													
*Tiger													
*Jaguar													
*Leopard													
*Seeadler													
*Greif													
*Kondor													
*Falke													
*Möwe													
TORPEDO BOATS—													
T. 1-30	1938-1940	267	28½	6½	2	600	25,000	36	1 4½-in. 1 1½-in.	2 21 in. (T)
SUBMARINES—†													
U 2-6	Deutsche Werke, Kiel	1935	136½	13	12½	2	250	700	13 7	1 1-pr.	3 21 in.	23	..
U 7-11, 17, 20-24 ..													
U 28-30	Deschimag, Bremen	1936	206½	19	13	..	500	..	16·5 8	1 3½-in. 1 1-pr.	5 21 in.	35	..
U 34													
U 37, 38, 43	Deschimag, Bremen	1939	246	20·6	13·5	..	740	3200	18·5 9	1 4-in. 1 1-pr.	6 21 in.	40	..
U 45-55													
U 45-55	Krupp Germania	1939	213	19·7	13·1	2	517	2100	16·5 8	1 3½-in. 1 1-pr.	5 21 in.	35	..
U 56-63													
U 56-63	Deutsche Werke, Kiel	1939	136·5	13	12·5	2	250	700	13 7	1 1-pr.	3 21 in.	23	..
U 65-68													
U 65-68	Deschimag, Bremen	1939	246	20·6	13·5	2	740	3200	18·5 9	1 4-in. 1 1-pr.	6 21 in.	40	..
U 69-76													
U 69-76	Krupp Germania	1939	213	19·7	13·1	2	517	2100	16·5 8	1 3½-in. 1 1-pr.	5 21 in.	35	..
‡U 570													

* Classified as torpedo boats in German official lists.

† The strength of the German Submarine Fleet is not known.

‡ Captured by British Hudson Aircraft.

Greece. §

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—													
Pindos .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kanaris .. ..			..	..	..	..	..	..	..	..	..	..	..
Adrias .. ..			..	..	..	..	..	..	..	..	..	..	..
Paul Cundouriotis ..			..	..	..	..	..	..	..	..	..	..	..
Spetsai	Odero, Genoa	1931	308.8	30.3	10.5	2	1230	30,000	40	44.7 in., 4	6	156	630
Thyella	Yarrow ..	1906	220	20.6	9.0	2	305	6,000	36	2-pr. A.A. 40 mines	21-in. (T.)	70	80
Sphendon		1906	220	20.6	9.0	2	305	6000	30	2 3-in.	2	70	—
Basilieus Giorgios I ..	Yarrow	1938	320	33	8.5	2	1350	34,000	36	1 2-pr.	18-in.	150	455
Basilissa Olga ..		1938	320	33	8.5	2	1350	34,000	32	4 5-in., 4 1.5-in.	8	21-in.	—
Niki	Stettin (Vulcan)	1906	220	20.6	9.0	2	275	6000	30	2 3-in., 4	2	70	90
Aspis										6-pr.	21-in.	—	—
*Aetos, *Panther, *Ierax ..	Birkenhead	1911	293	27.7	9.6	2	1013	19,750	32	4 4-in., 2 2-pr. (Panther and Aetos, 40 mines)	6	102	266
TORPEDO BOATS—													
Aigli	Stettin (Vulcan)	1913	147.8	9	4	2	142	2400	25	2 6-pr.	2	..	25
† Pergamos	Flume	1914	178.4	18.8	5	2	237	5000	28½	1 11-pr.	3	25	21
† Proussa	Flume	1914	178.4	18.8	5	2	237	5000	28½	1 11-pr.	3	25	31
SUBMARINES—													
Katsolis	Schneiders, Harfleur	1926	203½	17.7	12.3	2	567	1300	14	1 4-in., 1	6	30	..
Papanicolis	Ch. de la Loire, Nantes						760	1000	9.5	2-pr. A.A.	21-in.	—	—
Nereus	Ch. de la Loire, Nantes	1927	226½	18½	12.6	2	689	1500	14	1 4-in., 1	8	42	..
							945	1200	9.5	2-pr. A.A.	21-in.	—	—

* Reconstructed by Messrs. J. S. White & Co., Cowes, 1924-25.

† Surrendered Austrian torpedo-boats.

§ Under the control of Germany. Some of the above vessels are under British control.

Italy.

Name or Number.	Where built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel. Oil											
			Length. (Extreme.)	Beam.	Draught.																			
			Feet.	Feet.	Feet.		Tons.		Knots				Tons.											
DESTROYERS—																								
U. Vivaldi	Genoa	1929	353	33·6	10·5	2	1628	50,000	38	6 4·7-in. (In pairs) 4 1·5-in. A. A. Carry mines	2 21-in. (D.)	185	600											
A. Usodimare	(Odero)	1929																						
L. Malocello	Genoa	1929																						
A. da Noli	(Ansaldo)	1929																						
E. Pessagno	(Cant. Navali)	1929																						
N. da Recco	Ancona	1929																						
N. Zeno	(Cant. Navali)	1928	340	32	9·8	2	1382	35,000	35	{ 8 4-in., 4 2-pr. A. A., 100 mines.)	2 18-in. (D.)	150	344											
G. da Verazzano	Flume ..	1928																						
A. Pigafetta		1929																						
Augusto Riboty	Ansaldo ..	{1916 1915}																						
Carlo Mirabello			350	33·4	10·9	2	1620	48,000	39	4 4·7-in. 4 1·5-in. A. A.	6 21-in.	170	560											
Camicia Nera	Odero-Terni } Orlando	1938																						
Ascarì																								
Corazziere																								
Geniere																								
Aviere																								

Italy—continued.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.											
			Length. (Extreme.)	Beam.	Draught.								Oil											
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.											
DESTROYERS—Contd.																								
Carabiniere	Cartieri Dell' Tirreno	1938	350	33·4	10·9	2	1620	48,000	39	4 4·7-in. 4 1·5-in. A.A.	6 21-in. (T.)	170	500											
Lanciere	Riva Trigoso																							
Granatiere	Cartieri Navali	1938																						
Bersagliere	Rivitti																							
Fuciliere	Palerino	1938																						
Alpino	Cantieri Navali di Ancona																							
*Lira	Cantieri Navali del Quarnaro	1937	267	26	7·9	2	679	19,000	34	3 3·9-in. 6 1·5-in.	4 18-in.	94	..											
*Lupo	Genoa	1938																						
*Linca	Ansaldo,	1938																						
*Libra	Genoa																							
*Olio	Naples	1937																						
*Calliope	Orlando.	1936	350	33½	10	2	1570	48,000	39	4 4·7-in. 4 1·5-in. A.A. carry mines	6 21-in. (T.)	157	..											
*Circò	Ansaldo																							
*Alcone	Genoa	1936	267	27	7·6	2	652	19,000	34	3 3·9-in. 6 1·5-in. A.A.	4 18-in.	..	..									
*Aretusa	Ancona																							
*Polluce	Fiume	1935	269	27	7·2	2	652	19,000	34	3 3·9-in. 6 1·5-in. A.A. guns	4 18-in.	..	..									
*Partenope	Ancona																							
*Pleladi	Fiume	1935	350	33½	10	2	1449	44,000	38	4 4·7-in., 4 1·5-in. A.A.	6 21-in.	156	600											
*Pallade	Ancona	1934																						
A. Oriani	Odoro, Sestri	1930	315	32	9·5	2	1206	44,000	38	4 4·7-in. 4 M. A.A.	6 21-in. (T.)	156	225											
V. Globéri	Pozente																							
Antares	Cant. Navale di Tirreno,	1931	315	32	9·5	2	1206	44,000	38	4 4·7-in. 4 M. A.A.	6 21-in. (T.)	156	225											
*Cassiopea	Sestri Levante																							
*Castore	Cartieri	1931	315	32	9·5	2	1206	44,000	38	4 4·7-in. 4 M. A.A.	6 21-in. (T.)	156	225											
*Cigno	Partenopel, Naples																							
*Sagittario		1931	315	32	9·5	2	1206	44,000	38	4 4·7-in. 4 M. A.A.	6 21-in. (T.)	156	225											
*Cantauro																								
*Clitene		1931	315	32	9·5	2	1206	44,000	38	4 4·7-in. 4 M. A.A.	6 21-in. (T.)	156	225											
Sirio																								
Perseo		1931	315	32	9·5	2	1206	44,000	38	4 4·7-in. 4 M. A.A.	6 21-in. (T.)	156	225											
Grecale																								
Maestrale		1931	315	32	9·5	2	1206	44,000	38	4 4·7-in. 4 M. A.A.	6 21-in. (T.)	156	225											
Dardo																								
Strale		1931	315	32	9·5	2	1206	44,000	38	4 4·7-in. 4 M. A.A.	6 21-in. (T.)	156	225											
Freccia																								
Saetta		1931	315	32	9·5	2	1206	44,000	38	4 4·7-in. 4 M. A.A.	6 21-in. (T.)	156	225											
Folgore																								
Lampo		1931	315	32	9·5	2	1206	44,000	38	4 4·7-in. 4 M. A.A.	6 21-in. (T.)	156	225											
Turbine	Genoa	1927	307½	30	9·5	2	1073 1092	35,000	36	4 4·7-in., 3 M., 52 mines 2 1·5-in. A.A.	6 21-in. (T.)	140	340											
Euro																								
Francesco Crispi ..	Naples	1925	278·6	28·2	8·6	2	935	36,000	35	4 4·7-in., 22-pr. A.A., 2 M., 40 mines	2 21-in. (D.)	106	200											
Quintino Sella ..	(Pattison)	1925																						
*Giuseppe Sirtori ..	Genor (Odoro)	1916	237½	24	9·0	2	669	15,000	32-33·8	4 4·7-in., 2 M., 2-pr. A.A. 2 M.	4 18-in. (D.)	100	150											
E. Cosenz	Genoa (Odoro)	1918	237½	24	7·9	2	635	15,500	31-34	4 4-in., 2 3-in., 2 M., 10 mines.	4 18-in. (D.)	100	150											
Giacomo Medici ..		1917																						
G. La Farina		1918																						
Nicola Fabrizi ..		1917																						
Angelo Bassini ..		1917																						
Giacinto Carini ..		1917																						
G. La Masa		1917																						

• Designated torpedo boats in Italian official lists.

Italy—continued.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Standard Displacement	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—contd.													
Antonio Mosto ..	Naples (Pattison) Genoa (Odero)	1914	239	24	8·8	2	615	14,500	30	{ 5 4-in., 2 2-pr. A.A. 2 M.	4 18-in. (D.)	71	150
Giuseppe Abba ..													
Rosalino Pilo ..													
*Giuseppe Dezza ..	Genoa (Odero)	1914	236	24	8·8	2	615	13,500	30	{ 5 4-in., 2 2-pr. A.A. 2 M.	4 18-in.	71	150
*Giuseppe Misori ..		1915											
*Gen. A. Cantore ..		1921	241½	24	7·9	2	635	18,000	30	{ 3 4-in., 23-in. A.A. 2 M.	4 18-in. (D.)	100	150
*Gen. A. Chinotto ..													
*Gen. A. Papa ..													
*Gen. A. Cascino ..													
*Gen. M. Prestinari	1922										4 18-in. (D.)	111	252
*Gen. C. Montanari													
Audace (ex-Japanese Kawakaze) ..	Yarrow ..	1917	287	27·5	8·3	2	628	21,500	34·5	7 4-in., 2 M.			
Solferrino ..	{ Leghorn (Orlando)	1921	269	26·5	8·6	2	{ 860 966	22,000	32	{ 4 4-in., 2 3-in. A.A., 2 M., 24 mines	6 18-in.	105	170
S. Martino, Curtatone		1922	283½										
Castelfidardo, Calatafimi, Monsambano ..		1923											
SUBMARINES—													
A. Cagni ..	Monfalcone	1940	285	25·5	17·2	2	1461	4600	18 8·9	2 3·9-in., 4 M., A.A.	14 18-in.	..	..
L. Torelli ..	La Spezia ..	1940	247	22·5	16·5	2	1036	3600	18 8·5	1 3·9-in., 4 M., A.A.	8 21-in.	60	..
L. da Vinci ..	La Spezia ..	1939											
A. Bagnolini ..	Taranto ..	1939	250	23	13·8	2	1030	3500	18 8·5	1 3·9-in., 4 M., A.A.	8 21-in.	60	..
R. Giuliani ..		1939											
Barbarigo ..	Adriatico ..	1938	239½	23·5	16·5	2	941	3,000	17 8·5	2 3·9-in., 2 M., A.A.	8 21-in.	..	..
Veniero ..		1938											
Dandolo ..		1938											
Morošini ..		1937											
Moconigo ..		1938											
Emo ..	Tosi ..	1937	231·4	22½	13½	2	896	3,000	71 8·5	1 3·9-in., 4 A.A.	8 21-in.	..	..
Brin ..		1938											
Guglielmotti ..	Spezia ..	1938	238	23·5	15	2	950	3,000	17 8·5	2 3·9-in., 4 M.	8 21-in.	52	..
Cappellini ..	Adriatico ..	1936	19	21	14·4	2	620	1350	14 8·5	1 3·9-in., 2 M.	6 21-in.	40	..
Alagi ..	Adriatico ..	1936											
Aradam ..	Orlando ..	1937											
Ascianghi ..	Adriatico ..	1936											
Azum ..	Tosi ..	1936											
Dagabur ..	Tosi ..	1936	197	21	14·4	2	844	1350	14 8·5	1 3·9-in., 2 M.	6 21-in.	40	..
Dessle ..	Tosi ..	1937											
Uarsheich ..	Orlando ..	1938											
Scire ..	Orlando ..	1938											
Bellul ..	Adriatico ..	1936	206	22·6	10·5	2	676	1350	14 8	1 3·9-in., 2 M.G.	6 21-in.	40	..
Argo ..	Adriatico ..	1936	197	21	14·4	2	620	1350	14 8·5	1 3·9-in., 2 M.	6 21-in.	40	..
Velella ..													
Diapro ..	Adriatico ..	1936	197	21	14·4	2	620	1350	14 8·5	1 3·9-in., 2 M.	6 21-in.	40	..
Turchese ..													
Corallo f. ..													
Malachite ..	Orlando ..	1936	197	21	14·4	2	620	1350	14 8·5	1 3·9-in., 2 M.	6 21-in.	40	..
Ambr ..													
Onice ..													
Atropo † ..	Tosi ..	1937	266½	23½	12½	2	119·0	2880	17 8	1 3·9-in., 2 M.	6 21-in.	60	..
Zoea † ..													
G. Fini † ..	Spezia ..	1935	275	25·5	13·2	2	1332	4400	17 8·75	2 4·7 in. 4 M., 14 mines	8 21-in.	09	..
E. Tasmoli † ..													

* Designated torpedo boats in Italian official lists.

† Minelayers.

Italy—continued.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.				
			Length (Extreme.)	Beam.	Draught.									Tons.	Knots.	Tons	
SUBMARINES—contd.																	
Smeraldo	Tosi	1933	197	21	12	2	590	1,350	14	1 3-9-in.	6	..	..		
Topazio	Fiume						787	800	8-4	2 m.	21-in.						
Zaffiro & Ametista	Orlando																
Sirena, Nereide, Galatea	Monfalcone						1934	231½	22½	13	850			3,000	17	1 3-9-in.	8
Ondina											1231			1,800	8-5	2 m.	21-in.
Archimede	Taranto	1934	240	23½	14½	2	860	3,000	17-0	2 3-9-in.	8	..	..		
Otaria †	Monfalcone	1934	240	23½	14½	2	1167	1,040	8-5	2 4-7-in., 4 m.	6	..	..		
Pietro Micca †	Taranto	1935	296	25½	17-5	2	1871	3,000	15-5	40 mines	8	..	..		
Squalo, Narvalo, Delfino, Tricheco	Cantiere N., Triestino	1930	229	19	14-5	2	1883	1,500	8-5	1 4-in.	21-in.	64	..				
Jalea & Jantina	Odero-Terni } Taranto	1932	201-8	18-5	12	2	810	3,000	16-5	2 m.	21-in.	..	..		
Serpente & Salpa							1077	1,400	9	1 4-in.	6	..	..		
Santorre Santarosa	Ansaldo	1929	229	19	15-5	2	599	1,200	14	1 4-in.	6	..	..		
Ciro Menotti							778	900	8-5	2 m.	21-in.						
Fratelli Bandiera	Monfalcone	1929	229	19	15-5	2	815	3,000	17-5	1 4-in.	8	50	..				
Luciano Manara	Taranto	1930	223	18-6	14	2	1078	1,300		9	2 m.	21-in.					
Luigi Settembrini							797	3,000	1134	1,400							
Ruggiero Settimo							1340	5,500	19	1 4-7-in.	8	66	80				
E. Fieramosca	{ Taranto } (Tosi)	1929	277	27	16-8	2	1760	2,000	10	4 m.	21-in.						
M. Bragadino	Taranto	1929					802	1,500	14	1 4-in., 2 m.	4	50	41				
F. Corridoni	(Tosi)	1930	223	18-6	14	2	1051	1,900	8	24 mines	21 m.						
Ballila †	Speszia, Ansaldo	1927					1368	4,400	18-5	1 4-7-in.	6	66	140				
A. Sciesa †		1928					1874	2,200	9	4 m. 16 mince	21-in.						
E. Toti †		1928	287	25-6	12-6	2											
D. Millevire †		1927															
V. Pisani		1927															
M. Colonna	Montfalcone, Trieste	1927	223	18-7	13-8	2	791	3,000	17-5	1 4-in.	6	35	48				
A. des Geneys		1928					1040	1,900	9	2 m.	21-in.						
G. Bausan		1928															
G. Mameli	Taranto	1926					770	3,000	17	1 4-in.	6	35	48				
T. Speri		1928	212	21-5	13	2	994	1,000	9	2 m.	21-in.						
G. da Procida		1928															
X 2, 3	Ansaldo	1916	139-9	18	11	2	390	650	8	1 3 in. A.A.	2	20	15				
							460	860	6	1 m., 18 mines	18-in.						
H 1, 2, 4, 6, 8	Vickers	1917	150-3	15-8	12	2	336	620	13	1 3-in. A.A.	4	22	18				
							46	480	10	1 m., Hl. 4, and 6 only	18-in.						

† Minelayers.

About 14 submarines projected.

Japan

Name or Number.	Where Built	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons
DESTROYERS :													
FIRST CLASS—													
Tanikaze	Fujinagata..	1939- 1940	360	33·3	9	2	1500— 2000	38,000	34	6 5-in.	2 24-in. (Q.)	500	
Amatsukaze	Maizuru ..												
Tokitsukaze	Uraga ..												
Arashi	Maizuru ..												
Urakaze	Fujinagata												
Hagikaze	Uraga ..												
Nowake	Maizuru ..												
Yukikaze	Sasebo ..												
Kuroshio	Fujinagata												
Oyashio	Maizuru ..												
Natsushio	Fujinagata	1937- 1938	356	33·3	9	2	1500	38,000	34	6 5-in.	2 24-in. (Q.)	200	500
Hatsukaze	Kawasaki ..												
Hayashio	Uraga ..												
Arashio	Kawasaki ..												
Osio	Maizuru ..												
Michishio	Fujinagata..												
Asagumo	Kawasaki ..												
Minegumo	Fujinagata..												
Kasumi	Uraga ..												
Yamagumo	Fujinagata..												
Natsugumo	Sasebo ..	1935- 1936	336	31·8	9·1	2	1368	37,000	34	5 5-in. 2 M. G.	2 21-in. (Q.)	200	400
Asashio	Maizuru ..												
Arare	Maizuru ..												
Kagero	Maizuru ..												
Shiranuhi	Uraga ..												
Isokaze	Sasebo ..												
Yudachi	Sasebo ..												
Harusame	Maizuru ..												
Samidare	Uraga ..												
Umikaze	Maizuru ..												
Yamakaze	Uraga ..	1933- 1934	338	32·7	8·8	2	1368	37,000	34	5 5-in. guns 2 M.	2 21-in. (T.)	200	400
Kawakaze	Sasebo ..												
Suzukaze	Uraga ..												
Murasame	Sasebo ..												
Shigure	Uraga ..												
Shiratsuyu	Sasebo ..												
Hatsushima	Uraga ..												
Ariake	Kawasaki ..												
Yugure	Maizuru ..												
Wakaba	Sasebo ..												
Nenohi	Uraga ..	1929- 1932	371·5	34	10·7	2	1700	40,000	34	6 5-in., 2 M.	3 21-in. (T.)	200	420
Hatsuhara	Sasebo ..												
Oboro	Sasebo ..												
Akebono	Fujinagata												
Sazanami	Maizuru ..												
Ushio	Uraga ..												
Akatsuki	Sasebo ..												
Hibiki	Maizuru ..												
Ikazuchi	Uraga ..												
Inazuma	Fujinagata												
Sagiri	Uraga ..	1929	371·5	34	10·7	2	1700	40,000	34	6 5-in., 2 M.	3 21-in. (T.)	197	420
Asagiri	Sasebo ..	1929											
Yugiri	Maizuru ..	1930											
Amagiri	Tokyo ..	1930											
Shikinami	Maizuru ..	1929											
Ayanami	Fujinagata	1929											
Fubuki	Maizuru ..	1927											
Shirayuki	Yokosuka ..	1928											
Hatsuyuki	Maizuru ..	1928											
Murakumo	Fujinagata	1928											
Shinonome	Sasebo ..	1927											
Usugumo	Ishikawa- Jima (Tokyo)	—											
Shirakumo	Fujinagata..	1927											
Isonami	Uraga ..	1927											
Uranami	Sasebo ..	1928											

A number of the above ships have been destroyed.

Japan—continued.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.																									
			Length (extreme).	Beam.	Draught.								Coal	Oil																								
			Feet.	Feet.	Feet.		Tons.		Knots.					Tons.																								
DESTROYERS—contd.																																						
FIRST CLASS—contd.																																						
Minadzuki	Uraga	1926	320 b.p.	30	9·8	2	1315	38,500	34	{ 4 4·7-in., 2 M. A.A. }	2 21-in. (T)	148	—	400																								
Fumitsuki	Fujinagata ..	1926																																				
Nagatsuki	Ishikawajima ..	1926																																				
Kikudzuki	Maizuru	1926																																				
Mikadzuki	Sasebo	1926																																				
Mochidzuki	Uraga	1927																																				
Yudzuki	Fujinagata ..	1927																																				
Yayoi	Uraga	1924, 25																																				
Udzuki	Ishikawajima ..	1925																																				
Mutsuki	Sasebo	1924, 25																																				
Kisaragi	Maizuru	1925	320 b.p.	30	9·6	2	1270	38,500	34	{ 4 4·7-in., 2 M. A.A. }	21-in. (D)	148	—	400																								
Satsuki	Fujinagata ..	1925																																				
Oite	Uraga	1924, 25																																				
Hayate	Ishikawajima ..	1925																																				
Yunagi	Sasebo	1924, 25																																				
Kamikaze	Nagasaki	1922																																				
Asakaze	Maizuru	1922-24																																				
Harukaze																																						
Matsukaze	Fujinagata ..	1924													320 b.p.	28·25	9·5	2	1215	38,500	34	{ 4 4·7-in., 2 M. A.A. }	21-in. (D)	149	—	400												
Hatakaze	Nagasaki	1919-22																																				
Asanagi																																						
Sawakaze	Maizuru	1924	320 b.p.	28·25	9·5	2	1215	38,500	34	{ 4 4·7-in., 2 M. A.A. }	21-in. (D)	149	—	400																								
Okikaze, Shimakaze, Nadakaze, Yukaze, Hakaze, Minekaze, Namikaze, Numakaze, Nokaze, Tachikaze, Shiokaze, Hokaze, Yakaze, Akikaze	Mitsubishi, Kawasaki, Maizuru	1926-22																																				
SECOND CLASS—																																						
Wakatake	Kawasaki	1922																									320 b.p.	26·5	8·3	2	820	21,500	31·5	{ 3 4·7-in., 2 M. A.A. }	21-in. (D)	110	—	250
Kuretake	Kobe	1922																																				
Fuyo	Fujinagata ..	1922, 23																																				
Karukaya	Ishikawa	1922-23																																				
Asagao	jima	1923																																				
Yugao	Uraga	1923																																				
Sanaye	Sasebo	1916-18																																				
Yanagi, Momo	Maizuru	1916-18																																				
Hinoki	Kawasaki	1917-19																																				
Kaki	Kure	1917-19																																				
Kuri	Ishikawa	1917-19																																				
Nire, Tsuga	jima	1917-19	320 b.p.	26	8	2	770	21,500	31·5	{ 3 4·7 in., 2 M. A.A. }	21-in. (U)	80	—	290																								
Hagi	Uraga	1920-1922																																				
Susuki, Yomogi	Ishikawa	1920-1922																																				
Sumire	jima	1920-1922																																				
Hishi, Hasu	Uraga	1920-1922																																				
Tade, Fuji	Fujinagata ..	1920-1922																																				
Aoi, Kiku	Kawasaki	1920-1922																																				
Tsuta, Ashi	Kobe	1920-1922																																				
Nashi, Take	Yokosuka	1920-1922																																				
Kaya	Yokosuka	1920-1922																																				
TORPEDO BOATS—																																						
Chidori	Maizuru	1933	254	24	6	2	527	7000	26	3 4·7 in.	21-in.																								
Manazuru	Fujinagata ..	1933																																				
*Tomazuru	Maizuru	1933																																				
Hatsukari	Fujinagata ..	1912																																				
†Yamaseimi	Schichau	1912																																				
†Kawaseimi	Kawasaki	1908																																				
Otori	Maizuru	1933																																				
Hiyodori	Ishikawa	1933																																				
Hayabusa	jima	1935																																				
Kasasagi	Yokohama	1935																																				
Karl	Osaka	1935																																				
Sagi	Mitsubishi	1935																																				
Hato	Harima	1935																																				
Kiji	Ishikawa	1935																																				
	jima	1935																																				
	Tama	1935																																				

* Capized in 1934 but has been repaired and put into commission again. † ex-Chinese Chien Kang. ‡ ex-Chinese Hu Ngo.
A number of the above ships have been destroyed.

Japan—continued.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes	Complement.	Fuel Oil
			Length (extreme).	Beam.	Draught.									Tons.	Knots.	Tons.
SUBMARINES—													
I 68	Kure	1933	331	27	13	2	Surf.	6000	20	1 3·9 in.	6	60	..
I 69	Kobe	1934					Sub						
I 70	Sasebo ..						14C0						
I 71	Kawasaki ..	1935					—						
I 72 and I 73 ..	Mits. bishi						—						
I 74 and I 75 ..	Sasebo ..	1936					—			1 4·7-in.	6	60	..
	Mitsubishi..												
I 9-124 .. ..	.. ..	1939	344	29·9	14·4	2	1950	6000	17	2 5·5-in.	4	60	..
I 25-134 .. ..	.. ..	1940					2600	—	—				
I 8	Kawasaki ..	1935	344	29·9	14·4	2	1950	6000	17	2 5·5-in.	4	60	..
I 7	Kure						2500	1800	9				
I 6	Kawasaki ..	1934	320	30	15·7	2	1900	6000	17	1 5-in.	6	60	..
	.. ..						2500	1800	9				
I 5	Kawasaki ..		321	26·9	15·9	2	1638	6000	19	1 4-in.	6	70	..
I 65	Kure	1931					2100	1800	9				
I 66	Sasebo ..		320½	25·7	16	2	1635	6000	21	1 4·7-in.	6	56	255
I 67	Kobe	1928					2100	1800	7·9				
I 62	Kure	1929	320	30·2	15·7	2	1955	6800	17	{ 2 5·5-in. }	6	61	520
I 64	Kawasaki ..	1929					2480	1800	9				
I 4	Kure	1926	279½	24·6	14	2	1142	2400	14	1 5·5-in.	4	45	..
I 1, I 2, I 3 ..	Kawasaki ..	1927					1470	1200	9·5				
†I 121 ex I 21 ..	.. ..	1928	331½	26	16	2	1635	6000	21	1 4·7-in.	8	56	255
†I 122 ex I 22 ..	.. ..	1928					2100	1800	7·9				
†I 123 ex I 23 ..	Kawasaki ..	1928	239½	22	10·5	2	700	1200	16	1 3·15-in.	4	..	..
†I 124 ex I 24 ..	.. ..	1928					655	1200	13				
I 53	Kure	1927	243½	20	12·4	2	1000	1200	10	1 4·7-in.	4	43	75
I 55	Kure	1927					1000	1200	10				
I 56	Kure	1929	250	24·2	12·4	2	988	2400	16	1 3·15-in.	6	47	75
I 54	Sasebo ..	1927					1300	1800	10				
I 63	Sasebo ..	1928	300	28·7	15	2	1390	6000	19	1 4·7-in.	8	60	190
I 60	Sasebo ..	1929					2000	1800	7·9				
I 59	Yokosuka ..	1929	243·5	20	12·4	2	655	1200	13	1 4·7-in.	4	43	75
I 58	Yokosuka ..	1928					1000	1200	10				
I 57	Kure	1929	243·5	20·1	12	2	746	2600	16	1 3·15-in.	4	45	75
Ro. 33	Kure	1934					1000	1200	10				
Ro. 34	Mitsubishi..	1935	250	24·2	12·4	2	988	2400	16	1 3·15-in.	6	47	75
Ro. 31	Mitsubishi..	1927					1300	1800	10				
Ro. 60-68 ..	Mitsubishi..	1924-26	330	25	16·8	2	655	1200	13	1 4·7-in.	4	43	75
I. 51 .. .. .	.. ..	1924					1000	1200	10				
I. 52	Kure	1925	243·5	20	12·4	2	746	2600	16	1 3·15-in.	4	45	75
Ro. 30-32 ..	Kawasaki ..	1924					1000	1200	10				
Ro. 28	Kawasaki ..	1923	243·5	20·1	12	2	889	2400	17	1 3·15-in.	4	65	76
Ro. 27	Sasebo ..	1923					1082	1200	10·5				
Ro. 26	Yokosuka ..	1924	231·5	23·5	13	2	893	2400	17	1 3·15-in.	6	65	76
Ro. 25	Sasebo ..	1922					1082	1200	10·5				
Ro. 57	Kure	1923	231·5	23·5	13	2	893	2400	17	1 3·15-in.	6	65	76
Ro. 58, 59 ..	Yokosuka ..	1922					1082	1200	10·5				
Ro. 54-56 ..	Mitsubishi..	1922	231·5	23·5	13	2	893	2400	17	1 3·15-in.	6	65	76
Ro. 53	Mitsubishi..	1921					1082	1200	10·5				
Ro. 51	Mitsubishi..	1920	75	..	..	..	..	..	..	H.A., 1 3-pr.	18-in.	65	76
Midget Class ..	.. ..	..					..	..	..

† Fitted for minelaying.

A number of the above ships have been destroyed.

Netherlands.*

Name or Number	Where built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-power.	Maximum speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme).	Beam.	Draught.								Coal Oil
			Feet.	Feet.	Feet.		Tons.		Knots				Tons
DESTROYERS— Jan van Galen Tjerk Hiddes	ex-British	1941	..	..	..	..	..	..	..	6 4·7-in.	..	..	..
1ST CLASS TORPEDO BOATS— G 13, 15 and 16	{Scheldt Fijenoord }	1913- 1914	162·5	17·3	9·0	1	150	2,600	25	2 3-in.	3 17·7-in. 4	27	40 —
Z 3	Amsterdam	1917	201	20·4	6	2	277	5,500	27	2 3-in., 2 m.	4 17·7-in. 4	48	61 8
Z 5-8 ..	{Scheldt Fijenoord }	1915	192	19·8	5·5	2	264	5,500	27	2 3-in., 2 m.	4 17·7-in.	48	70 7
SUBMARINES— Dolfijn ..	ex-British	..	..	..	..	..	..	..	..	..	..	..	..
K XIV ..	Rotterdam	1832-3	242	21·6	12·5	2	770 1,030	3,200 1,000	17 9	1 3·5-in., 2 2-pr.	8 21-in. 8	35	..
O 19	Rotterdam	Bldg.	265	24·6	12·5	2	966 1,020	5,000 —	17 9	1 3·5-in., 2 1·5-in.	8 21-in. 8	36	..
O XXI ..	De Schelde	1939	254½	25½	13	2	888 1,205	5,000 —	20 9	1 3·5-in. 2 1·5-in.	8 21-in. 8	37	Oil
O 23	Rotterdam	1939											
O 24	Rotterdam	1940											
O 25	Rotterdam	1940											
O 26	Bldg.		199	18·7	11·5	2	560 700	1,900 600	15 8	2 1·5-in. A.A.	5 21-in. 6	31	..
O 27	Wilton Fijenoord	Bldg.											
O 14 ..	De Schelde	1931	199	18·7	11·5	2	660 810	2,400 725	15 8	1 3·5-in. 1 maxim	6 17·7-in. 6	31	— 45
K XII ..	Fijencord	1924	218 8	20·2	12·2	2	506 627	900 —	12½ 9	1 22-pr. A.A., 1 maxim	5 21-in.	29	— 21
O 10 ..	Amsterdam	1925	179½	18·7	11½	2							
O 9	Flushing												

* Under the Control of Germany.

A Netherlands Submarine operating with the British Navy reported lost.

Norway.*

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel. Coal Oil
			Length. (Extreme)	Beam.	Draught.									Tonn.
DESTROYERS—													
2 Destroyers	Horten ..	Bldg.	Feet. 319	Feet. 32·9	Feet. 8·9	2	Tons. 1220	30,000	Knots. 34	4 4·7-in. 2 1·57-in. 6 3-in.	4 21 -in.	120	..
Draug, Troll	Horten ..	1908-13	226	22·5	8·8	2	540	7,500	27·0	Draug has 6 4·7-in. in addition	3 18 -in.	71	95 6
Two Destroyers ..	ex-British ..												
TORPEDO BOATS:													
FIRST CLASS—													
Snogg	Horten ..	{1919- 1920}	173·9	18	5½	2	250	2,500	25	2 3-in.	4 18 -in.	31	30
Brand	Horten ..	1900	130·9	10·0	6·9	1	100	1,100	21	2 m.	2 18 -in.	19	17
Laks.. ..	Horten ..	1900	126·4	15·0	6·9	1	100	1,150	21·8	2 m.	2 18 -in.	19	17
Sild													
Steipner													
Gyller	Horten ..	1936	236·3	25·5	6·9	2	625	12,500	30	3 4-in., 1 1·5-in. A.A.	2 21 -in.	72	100
Odin, Balder, Tor ..	Fredrikstad	1939											
SECOND CLASS—													
Kjek. Hvas	Fredrikstad	1894	114·5	14·5	6·0	1	73	650-750	19-20	2 m.		14	11
Hauk, Falk	Horten ..	1903											
Skarv, Tolst	Horten ..	1906-7	133	14·5	6·5	1	100	1,600	25	2 3-pr.	2 18 -in.	18	16
Lom			117	14·5	5·7	1	72	1,100	23	2 m.	-in.	16	16
Orn			113	14·5	5·7	1	73	850	23	2 m.		16	16
Kjell	Horten ..	1912	135	14·9	6·4	1	100	1,800	25	2 3-pr.		19	15
SUBMARINES—													
B 1.	Horten ..	1922	167·3	17·5	10·5	2	413 545	900 640	14·5 10	1 3-in.	4 18 -in.	23	21
One Submarine ..	ex-British ..												

* Under the control of Germany.

Soviet Union.

Some of the details given below are uncertain.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Designed Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel. Oil
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
FLOTILLA LEADERS—													
Leningrad	1935	430	1950	{ 5 5·1-in. 2 3-in. A.A.	21- in.
Kharkov	1936											
Minsk	1936											
Perekop	1937											
Stalingrad	1937											
Moscow	1937											
Kiev	1937											
Volochevka	1937											
Arkhangelsk	1940											
Kronstadt	1939											
Murmansk	1940											
Petrosavodsk	1940											
DESTROYERS—													
Bdeetelni	} Ship & Eng. Co., Niko- laev	1938- 1940	2	1600	50,000	38	{ 4 5·1 in., 2 1·5 A.A.	6 21- in.
Bestrashni													
Bezuprechny ..													
Boiki													
Bystry													
Reshitelni													
Serditi													
Smely													
Smetlivy													
Gromki													
Grozni	} Ship & Eng. Co., Niko- laev	1917	303	29·5	10·5	2	1326	29,000	28	{ 4 4-in., 2 7- pr., 4 M., can carry 80 mines	12 18- in. (T.)	120	390
Bodri													
Gnevni													
Gordy													
Gremyashchi ..													
Grozovoy													
Groznyashchi ..													
Besposhtchadni													
Felix Dzerzhinski													
Petrovski													
Nezamoi	} Ship & Eng. Co., Niko- laev	1915	344·5	31·3	9·7	2	1350	32,700	35	{ 5 4-in., 1 3- in. A.A., carries mines	9 18- in. (T.)	{ 120	400
Shaumyan													
Kalinin													
Karl Liebknecht													
Uritsky													
Volodarski													
A. Zhdanov													
Engels													
Stalin													
Artem													
Volkov	} Ship & Eng. Co., Niko- laev	1914	336	31·1	9·8	2	1100	23,000	34	{ 4 4-in., 1 3- in., 4 M.	6 (D.)	120	350
Bezposhtchadni													
(ex-Frunze) ..													
Sneg													
Shtorm													
Shkval													
Groza, Metali,													
Smertsch, Taifun,													
Uragan, Wiche,													
Vyuga, Tsiklon,													
Grom, Vikhr,	} Ship & Eng. Co., Niko- laev	1932	236	24	10	2	700	13,200	29	{ 2 4-ins., 3 3-in., 2 M., 40 mines.	9 18- in.	72	..
Burya, Purga,													
Tucha													
Sovnarkom													
Stamor													
Sokki													
Sibirsk													
Molnya													
Sasovyets													
Serp													
Zarnitza													
Lukol													

Soviet Union—*continued.*

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Designed Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.			
			Length. (Extreme.)	Beam.	Draught.											
GUARD SHIPS— Dzerschinski Kirov	Ansaldo	1934	Feet. 250	Feet. 27	Feet. 9	3	Tons. 800	5,400	Knots. 20	{ 2 4-in., 4 1·5-in.		120	Tons. 44			
SUBMARINES—																
Chartist	1930-	..	..	..	..	1039	..	..	1 4-in.	1 6	..	..	
Garibaldiet		1933					1335			M.G.	21-in.					
Karbonari	1931	210	23	13½	2	869	2500	15	1 4-in., 1 1·5 in., 1 M.	1 21-in.	44	78			
Dekabrist							1318							1200	8	
Narodovoleets	1931				2	869	2500	15	1 4-in., 1 1·5 in., 1 M.	1 21-in.	44	78			
Krasnogvardeets							1318							1200	8	
Komsomolka	1931				2	869	2500	15	1 4-in., 1 1·5 in., 1 M.	1 21-in.	44	78			
Jacobinets							1318							1200	8	
Revolusioner	1931				2	869	2500	15	1 4-in., 1 1·5 in., 1 M.	1 21-in.	44	78			
Spartakovets							1318							1200	8	
12 others	1936	150	..	..	..	200	..	13 8	1 1·5-in.	18-in.	..	..	
About 100 Type M		1941					200									
About 100 Type Schtsch	1935-	200	..	..	..	500	..	..	1 1·5-in.	21-in.	..	..	
		1941					500									
Pravda	1936	..	..	..	..	1200	..	..	2 4-in., 2 M.	21-in.	..	..	
Iskra							1800									
Zvezda and 4 others	..	1936	..	..	..	..	1200	..	..	2 4-in., 2 M.	21-in.	..	..	
Bolshevik							1800									
Komissar	1916-	223	14½	12·6	2	650	2600	16	2 6-pr., 1 M.G.	1 18-in.	33	40			
Kommunar							790									
Tovarisnch	1917				2	650	2600	16	2 6-pr., 1 M.G.	1 18-in.	33	40			
Krasnoarmeets							790									
Krasnoflotets	1916-	223	14½	12·6	2	650	2600	16	2 6-pr., 1 M.G.	1 18-in.	33	40			
Bednyak							790									
Proletarii	1917				2	870	2400	17	1 4-in., 1 M.G.	1 21-in.	28	78			
Batrak							1139									
Rabochi	1917	230	24	13	2	620	1200	13½	1 1·57-in., 20 mines	4 21-in.	40	..			
Metallist							820									
Kommunist	1917				2	870	2400	17	1 4-in., 1 M.G.	1 21-in.	28	78			
Marxist							1139									
Politrabotrik	1917				2	620	1200	13½	1 1·57-in., 20 mines	4 21-in.	40	..			
L55 (ex-British) ..							820									
•Lembit	Vickers	1937	190	24½	11	2	620	1200	13½	1 1·57-in., 20 mines	4 21-in.	40	..			
•Kalev							820									

• ex-Estonian.

Spain

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel	
			Length. (Extreme.)	Beam.	Draught.								Coal	Oil
			Feet.	Feet.	Feet.		Tons.		Knots.					Tons.
DESTROYERS—														
Gravina	Cartagena ..	1934	333	31·7	10·5	2	1536	42,000	36	{ 5 4·7-in. 13-in. A.A. 4 M. 1	{ 6 21-in. (T.)	175	—	540
Eceano		1930												
Ciscar		1931												
Jorge Juan		1929												
Ulloa		1930												
Almirante Valdés..		1930												
" Antequera ..		1931												
Miranda		1929												
Churrucá		1930												
Alcala Galiano ..		1928												
Lepanto		1928												
José Luis Díez ..	Cartagena ..	1926	283	27	9	2	1044	33,000	34	{ 3 4-in., 2 1·85-in. A.A.	{ 2 21-in. (D.)	70	—	265
Sanchez-Barcaiztegui		1924												
Juan Lazaga		1923												
Valeseo		1922												
Alsedo	Naples ..	1920	310	31	10	2	1706	60,000	34	{ 4 4·7-in. 2 3-in. 2 M.	{ 2 17·7" (D)	139	—	260
Velasco Ceuta ..		1920												
Velasco Melilla ..	Ansaldo ..	1915	170	26	8	2	850	20,000	32	{ 5 4-in. 2 1·57-in. A.A., 2 M.	{ 2 17·7" (D.)	99	—	250
Huesca		1915												
Teruel														
TORPEDO BOATS—														
T 7, 9, 14, 16, 17, 18, 19	Cartagena ..	{ 1913— 1922	{ 164	16·5	6½	3	167	2750	36	3 1·9-in.	{ 3 18-in.	31	—	33
SUBMARINES—														
D1, 2, 3	Cartagena ..	{ 1934 —1935	276	21·8	13	2	1060	5000	20·5	1 4·7-in.,	6	..	..	..
							1375	1350	9·5	4 M.	21-in.			
C 3, 4	Cartagena ..	{ 1928 —1929	247	20·8	13·5	2	900	2000	16	1 3-in. A.A.	6	40	200	..
							1270	750	8·5		21-in.			
Isaac Peral (ex-C 1)														
B 2	Cartagena ..	1921-24	210	18·9	11·25	2	560	1400	16	1 3-in. A.A.	4	28	—	66
							830	850	10·5		18-in.			
General Mola	Taranto	1934	231·5	22·5	13	2	880	3000	17	2 3·9-in.	8	48	150	..
							1230	1300	8·5	2 M.O.	21-in.			

Sweden.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel
			Length. (Extreme.)	Beam.	Draught								Coal Oil
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons
DESTROYERS—													
Mode ..	Gothenburg ..	Bldg.	304	29'5	12'5	2	1020	32,000	39	{ 3 4-7-in. 4 1-in.	6 21-in.	131	— 150
Magne ..													
Munin ..													
Mjolner ..													
Gavle ..													
Norrköping ..	Gothenburg ..	1940											
Karlskrona ..	Karlskrona ..	1939											
Stockholm ..		1936											
Malmö ..		1938											
Göteborg ..	Göteborg ..	1935											
Klas Horn ..	Malmö ..	1931	304.2	29.2	10.5	2	1,000	24,000– 26,000	35	{ 3 4-7-in., 2 2-prs. A.A., 2 M.	2 trpl. 21-in.	125	— 150
Klas Uggla ..	Karlskrona ..												
Ehrensköld ..	Göteborg ..												
Nordenfjöld ..	Malmö ..												
Wale ..	Malmö ..	1906	216	20.8	9	2	354	8,000	30	2 3-in., 4 6-prs.	4 18-in.	69	80
Ragnar† ..	Malmö ..	1909	216	20.8	9	2	354	{ 8,000– 9,000	30.0	{ 4 3-in., 2 M.	2 18-in. (D.)	67	80 3
Sigurd ..	Gothenburg ..	1909											
Vidar ..	Malmö ..	1909											
Hugin ..	Gothenburg ..	1909											
Munin ..	Malmö ..	1910											
Wrangel †	Gothenburg ..	1917	232.8	22	9.2	2	458	11,000	34.0	4 3-in., 2 M.	6 18-in.	72	107 6
Wachtmeister ..													
Malmö ..	Gothenburg ..	1938	304	29.5	12.5	2	1,030	32,000	39	{ 3 4-7-in., 4 M.	6 21-in.	130	— 160
Karlskrona ..	Karlskrona ..	1939											
Norrköping ..	Gothenburg ..	1940											
Gjævel ..	Gothenburg ..	1940											
†Fuke ..	Naples ..	1926	278.6	28.2	8.7	2	935	36,000	35	{ 4 4-7-in., 2 1-6-in., A.A., 2 M. 40 Mines	4 21-in.	106	— 200
(ex-Ricasoli)													
†Pollander ..													
(ex-Nicotera)													
†Eomulus ..	Naples ..	1934	263.6	26.9	7.4	2	638	19,000	34	{ 3 3-9-in., 6 1-6-in., A.A.	4 17-in.	..	..
(ex-Spica)													
†Eemus ..													
(ex-Astore)	..	Bldg.	..	..	..	..	1,000	..	..	..	..	..	..
4 in Number ..													
SUBMARINES—													
1st Class—													
Dykaren ..	Kockum ..	1941	204	20'5	11	2	530 760	2,000 —	15 10	1 4-in., 2 M.	6 21-in.	..	..
Sjöborren ..													
Sjöbasten ..													
Sjöormen ..													
Svardfisken ..													
Tomlaven ..	Naval Yard, Karlskrona	{ 1930 1926 1928	213	21	10.8	..	700 850	2,800 —	16 9	1 4-in., 1 M.	4 20-in.	32	— 40
Ulven ..													
Draken ..													
Gripen ..													
Bavern ..	Naval Yard, Karlskrona	1921	185	18.5	9.2	..	500 650	2,800 —	15 9	1 3-in., 1 M.	4 18-in.	..	33
Illern ..													
Uttern ..													
Sålen ..	Kockum Co., Malmö	1920	171	16.5	11.5	..	450 580	2,800 —	..	1 3-in., 1 M.	4 18-in.	..	23
Valrossen ..													
Häjen ..	Kalakrona ..	1925	186	23.2	9.4	..	492 650	..	15 9	1 3-in., 1 M.	4 18-in.	..	34
Valen † ..													
Nordkaparen ..													
Delfinen ..	Kockum	1935	199	20½	11	..	500 720	..	15 10	1 4-in.	4 21-in.	28	..
Springaren ..													
Sjöjonet ..	Kockum	1936	204	20½	11	2	620 —	..	15 10	1 4-1-in., 2 M.G.	4 21-in.	32	..
Sjöbjörnen ..													
Sjöhundén ..	Kockum ..	1938	..	..	..	..	367	..	..	..	..	..	..
U 1, 2, 3 ..	Kockum ..	1941	..	..	..	..	..	..	..	..	..	..	..
Several in number	..	Bldg.	..	..	..	..	..	..	..	..	..	..	..

† Ex-Italian.

‡ Fitted for mine-laying.

United States.

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—													
Fletcher ..	Boston, N.Y.												
Radford ..													
Jenkins ..													
La Vallette ..													
Nicholas ..	Federal S.B. Co.												
O'Bannon ..													
Chevalier ..	Bath, I.W.												
Sauley ..													
Waller ..	Federal S.B. Co.												
Strong ..													
Taylor ..	Bath I.W.												
De Haven ..													
Rache ..	Bethlehem												
Beale ..													
Guest ..	Boston, N.Y.												
Bennet ..													
Fullam ..													
Hudson ..													
Hutchins ..	Charleston, N.Y.												
Fringie ..													
Stanly ..													
Stevens ..													
Halford ..	Puget Sound, N.Y.												
Leutze ..													
Watson ..	Federal S.B. Co.												
Philip ..													
Renshaw ..													
Ringgold ..													
Schroeder ..	Bath, I.W.												
Sigsbee ..													
Conway ..													
Cony ..													
Converse ..	Bath, I.W.												
Eaton ..													
Foot ..													
Spence ..													
Terry ..	Bethlehem, Staten Island	Bldg.*	— 5-in. guns
Thatcher ..													
Anthony ..													
Wadsworth ..													
Walker ..	Bethlehem, San Francisco												
Brownson ..													
Daly ..													
Isherwood ..													
Kimberley ..	Bethlehem, San Pedro												
Luce ..													
Abner Read ..													
Ammen ..													
Mullany ..	Gulf S.B. Co.												
Bush ..													
Trathen ..													
Hazelwood ..													
Heerman ..	Seattle												
Hoel ..													
McCord ..													
Miller ..													
Owen ..	Tacoma												
Putnam ..													
Stephen Potter ..													
Tingey ..													
Twining ..	S. B. Co.												
Yarnall ..													
Boyd ..													
Bradford ..													
Brown ..	Gulf S.B. Co.												
Cowell ..													
Capps ..													
David W. Taylor ..													
Evans ..	Seattle												
John D. Henley ..													
Franks ..													
Haggard ..													
Halley ..	Tacoma												
Johnston ..													

* Some of these vessels completed in 1942.

United States—*continued.*

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Oil.
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS— <i>continued.</i>													
Laws ..	Seattle-Tacoma S.B. Co.												
Longshaw ..													
Morrison ..													
Pritchett ..													
Robinson ..													
Roes ..													
Rowe ..													
Smalley ..													
Stoddard ..													
Watts ..													
Wren ..	Consolidated Steel Co., Orange												
Aulick ..													
Charles ..													
Ausburn ..													
Claxton ..													
Dyson ..													
Harrison ..													
John Rodgers ..													
McKee ..													
Murray ..													
Sproston ..	Boston, N.Y.												
Wickes ..													
William D. Porter ..													
Young ..													
Charette ..													
Conner ..													
Hall ..													
Halligan ..													
Haraden ..													
Newcomb ..													
Bell ..	Charleston, N.Y.												
Burns ..													
Izard ..													
Paul ..													
Hamilton ..													
Twiggs ..													
Howorth ..													
Killen ..													
Mansfield ..													
Metcalfe ..													
Shields ..	Bath, I.W.												
Wiley ..													
Abbott ..													
Braine ..													
Erben ..													
Hale ..													
Sigourney ..													
Stembel ..													
Bristol ..													
Ellyson ..													
Hambleton ..	Federal S.B. Co.												
Rodman ..													
Emmons ..													
Macomb ..													
Laffey ..													
Woodworth ..													
Forrest ..													
Fitch ..													
Corry ..													
Hobson ..													
Aaron Ward ..	Federal S.B. Co.												
Buchanan ..													
Lansdowne ..													
Lardner ..													
McCalla ..													
Mervine ..													
Quick ..													
Farenholt ..													
Bailey ..													
Carmick ..													
Doyle ..	Seattle-Tacoma S.B. Co.												
Endicott ..													
McCook ..													
Frankford ..													

* Some of these vessels completed in 1942.

United States—continued.

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.) Feet.	Beam. Feet.	Draught. Feet.								
DESTROYERS—													
<i>continued.</i>													
Bancroft ..	Bethlehem, Fore River												
Barton ..													
Boyle ..													
Champlin ..													
Meade ..													
Murphy ..	Bethlehem, San Francisco												
Parker ..													
Caldwell ..													
Coghlan ..													
Frazier ..													
Gansevoort ..	Bethlehem, San Pedro												
Gillispie ..													
Hobby ..													
Kalk ..													
Kendrick ..													
Laub ..	Federal S.B. Co.												
MacKenzie ..													
McLanahan ..													
Nields ..													
Ordranax ..													
Dawson ..	Seattle- Tacoma S.B. Co.												
Edwards ..													
Glennon ..													
Jeffers ..													
Maddox ..													
Nelson ..	Boston, N.Y.												
Baldwin ..													
Harding ..													
Satterlee ..													
Thompson ..													
Welles ..	Philadelphia, N.Y.												
Cowie ..													
Knight ..													
Doran ..													
Earle ..													
Butler ..	Norfolk, N.Y.												
Gherardi ..													
Herndon ..													
Shubrick ..													
Beatty ..													
Tillman ..	Federal S.B. Co.												
Stevenson ..													
Stockton ..													
Thorn ..													
Turner ..													
Jouett ..	Bath, I.W.	1939											
Davis ..		1938											
Sampson ..		1938											
Warrington ..		1938											
Somers ..		1938											
Winslow ..	New York S.B. Co.	1937											
McDougall ..		1937	381	36½	10½	2	1,850	50,000	37	8 5-in. 8 1½ in. A.A.	8 21-in.	200	500
Selfridge ..		1937											
Balch ..		1937											
Moffett ..		1937											
Clark ..	Bethlehem, Fore River	1936											
Phelps ..		1936											
Anderson ..		1939	341 W.L.	35½	10½	2	1,720	50,000	37	5 5-in.	12 21-in.	160	..
Swanson ..		1941											
Nicholson ..		1941											
Woolsey ..	Bath, I.W. Puget Sound N.Y.	1941											
Monssen ..		1941											
Wilkes ..													
Meredith ..													
Ericsson ..													
Ludlow ..	Boston, N.Y.	1941											
Grayson ..		1941	341 W.L.	35½	10½	2	1,630	50,000	37	5 5-in.	10 21-in.	..	..
Edison ..		1941											
Gwin ..		1940											
Eberle ..		1940											
Livermore ..	Bath, I.W.	1940											
Kearney ..		1940											
Plunkett ..	Federal S.B. Co.	1940											

* Some of these vessels completed in 1942.

United States—continued.

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS— <i>continued.</i>													
Charles F. Hughes	Charleston	1939–1940	341 W.L.	35½	10½	2	1,620	50,000	37	5 5-in.	10 21-in.	..	..
Hilary P. Jones	Puget Sound												
Lansdale	Boston, N.Y.	1939	341 W.L.	35½	10½	2	1,570	50,000	37	5 5-in.	12 21-in.	160	..
Madison	Bath, L.W.												
Niblack	Maine	1939	341 W.L.	35½	10½	2	1,500	50,000	37	4 5-in.	16 21-in.	155	..
Gleaves	Bethlehem S.												
Mayo	Co. Quincy	1938	334 on W.L.	34½	9½	2	1,395	42,800	36½	4 5-in. guns, 8 M.G.	8 21-in. (Q)	160	400
Benson	Philadelphia,												
Buck	N.Y.	1936–1938	334 on W.L.	34½	9½	2	1,395	42,800	36½	4 5-in. A.A., 8 M.G.	8 21-in. (Q)	160	400
Wainwright	Norfolk, N.Y.												
Roe	Charleston	1936–1937	334 on W.L.	34½	9½	2	1,395	42,800	36½	4 5-in. A.A., 8 M.G.	8 21-in. (Q)	160	400
Morris	Norfolk N.Y.												
Walke	Boston, N.Y.	1936–1937	334 on W.L.	34½	9½	2	1,395	42,800	36½	4 5-in. A.A., 8 M.G.	8 21-in. (Q)	160	400
O'Brien	Newport												
Russell	News	1936–1937	334 on W.L.	34½	9½	2	1,395	42,800	36½	4 5-in. A.A., 8 M.G.	8 21-in. (Q)	160	400
Mustin	Federal S.B. & D.D. Co.												
Hughes	Puget Sound	1936–1937	334 on W.L.	34½	9½	2	1,395	42,800	36½	4 5-in. A.A., 8 M.G.	8 21-in. (Q)	160	400
Wilson	Charleston												
Sterrett	N.Y.	1936–1937	334 on W.L.	34½	9½	2	1,395	42,800	36½	4 5-in. A.A., 8 M.G.	8 21-in. (Q)	160	400
Stack	Norfolk, N.Y.												
Rowan	Philadelphia,	1936–1937	334 on W.L.	34½	9½	2	1,395	42,800	36½	4 5-in. A.A., 8 M.G.	8 21-in. (Q)	160	400
Rhind	N.Y.												
Trippe	Boston, N.Y.	1936–1937	334 on W.L.	34½	9½	2	1,395	42,800	36½	4 5-in. A.A., 8 M.G.	8 21-in. (Q)	160	400
Mayrant	Boston, N.Y.												
Maury	Bethlehem	1936–1937	334 on W.L.	34½	9½	2	1,395	42,800	36½	4 5-in. A.A., 8 M.G.	8 21-in. (Q)	160	400
McCall	S.B. Co.												
Lang	Federal S.B. & D.D. Co.	1936–1938	334 on W.L.	34½	9½	2	1,500	50,000	37	4 5-in.	16 21-in.	155	..
Ellet	Navy Yard,												
Benham	Puget Sound	1939	334 on W.L.	34½	9½	2	1,500	50,000	37	4 5-in.	16 21-in.	155	..
Patterson	Navy Yard,												
Henley	Mare Is.	1936–1938	334 on W.L.	34½	9½	2	1,500	50,000	37	4 5-in.	16 21-in.	155	..
Ralph Talbot	Navy Yard,												
Mugford	Boston	1936–1937	334 on W.L.	34½	9½	2	1,500	50,000	37	4 5-in.	16 21-in.	155	..
Helm	Navy Yard,												
Bagley	Norfolk	1936–1937	334 on W.L.	34½	9½	2	1,500	50,000	37	4 5-in.	16 21-in.	155	..
Craven	Bethlehem												
Gridley	S.B. Co.	1936–1937	334 on W.L.	34½	9½	2	1,500	50,000	37	4 5-in.	16 21-in.	155	..
Fanning	United D.D.												
Dunlap	Co.	1936–1937	334 on W.L.	34½	9½	2	1,500	50,000	37	4 5-in.	16 21-in.	155	..
Mahan	United D.D.												
Cummings	Inc., N.Y.	1936–1937	334 on W.L.	34½	9½	2	1,500	50,000	37	4 5-in.	16 21-in.	155	..
Drayton	Bath, I.W.												
Lamson	Co.	1936–1937	334 on W.L.	34½	9½	2	1,500	50,000	37	4 5-in.	16 21-in.	155	..
Flusser	Federal S.B. & D.D. Co.												
Reid	Navy Yard,	1936–1938	334 on W.L.	34½	9½	2	1,500	50,000	37	4 5-in.	16 21-in.	155	..
Case	Boston												
Conyngham	Navy Yard,	1936–1938	334 on W.L.	34½	9½	2	1,500	50,000	37	4 5-in.	16 21-in.	155	..
Tucker	Norfolk												
Shaw	Philadelphia,	1936–1937	334 on W.L.	34½	9½	2	1,500	50,000	37	4 5-in.	16 21-in.	155	..
Cushing	N.Y.												
Perkins	Navy Yard,	1936–1937	334 on W.L.	34½	9½	2	1,500	50,000	37	4 5-in.	16 21-in.	155	..
Smith	Puget Sound												
Preston	Navy Yard,	1936–1937	334 on W.L.	34½	9½	2	1,500	50,000	37	4 5-in.	16 21-in.	155	..
Dale	Mare Is.												
Monaghan	Navy Yard,	1936–1937	334 on W.L.	34½	9½	2	1,500	50,000	37	4 5-in.	16 21-in.	155	..
Aylwin	N.Y.												
	Navy Yard,	1936–1937	334 on W.L.	34½	9½	2	1,500	50,000	37	4 5-in.	16 21-in.	155	..
	Philadelphia												

United States—continued.

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—continued.													
Farragut ..	Bethlehem S.B. Co.	1934	334	34½	9½	2	1,365	42,800	36½	4 5-in. A.A., 8 M.G.	2 Q. 21-in.	160	400
Dewey ..	Bath, I.W.Co.						1,345						
Hull ..	Navy Yard, N.Y.						1,395						
MacDonough ..	Navy Yard, Boston	1935					1,395						
Worden ..	Navy Yard Puget Sound						1,410						
*William B. Preston ..	Norfolk, N.W.	1920						26,000					
Noa ..		1921											
*Hulbert ..		1920											
Decatur ..		1922											
†Perry ..	Navy Yard, Mare Island.	1922											
Trever ..		1922											
Wasmuth ..		1921											
†Zane ..		1921											
Litchfield ..		1920											
*Thornton ..	Bethlehem S.B. Co., Squantum	1919											
*Ballard ..													
*Greene ..													
*Gillis ..	Bethlehem S.B. Co., Quincy												
*Osmond Ingram ..													
*Belknap ..													
Lawrence ..		1921	314·4	31	9·8	2	1,190	27,000	35	4 4-in., 1 3-in. A.A. (Kane, Fox, Brooks, Gilmer, and Hatfield have 4 5-in. guns.)	4 triple 21-in.	122	375
†Hopkins ..		1921											
Barry ..		1920											
Goff ..		1921											
Bainbridge ..		1921											
*Williamson ..													
Sands ..													
King ..													
*Childs ..	New York S.B. Co.												
*Overton ..													
*McFarland ..													
Humphreys ..		1920											
Kane ..													
Fox ..													
Gilmer ..													
Brooks ..													
Hatfield ..													
Paul Jones ..	Cramp, Pa.	1921											
John D. Ford ..		1920											
McCormick ..													
Bulmer ..													
Simpson ..													
MacLeish ..			314·4	31	9·8	2	1,190	26,000	35	4 4-in., 1 3-in. A.A. (Parrot, Whipple, Edws. & Borie have 4 5-in. guns.)	4 triple 21-in.	122	375
Parrott ..													
Whipple ..													
J. D. Edwards ..													
Borie ..	Cramp, Pa.	1920											
Barker ..													
Broome ..													
Long ..													
Hovey ..													
†Southard ..		1919	314·4	31	9·8	2	1,190	27,000	35	4 4-in., 1 3-in. A.A. (Long and Hovey have 6 4-in. twin mtgs. and 1 3-in. A.A.)	4 triple 21-in.	122	375
†Chandler ..													
Dallas ..		1920											
*George E. Badger ..	Newport News S.B. Co.	1921											
*Goldsborough ..		1920	314·4	31	9·8	2	1,190	25,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	375
†Dahlgren ..													
*Clemson ..		1919											

* Seaplane tenders.

† Minesweepers.

‡ Experimental vessel.

United States—continued.

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS— <i>continued.</i>													
†Stansbury ..	Union, I.W.	1919	314.4	31	9.8	2	1,060	27,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	283
†Howard ..													
†Hogan ..	Fore River S.B. Co.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Crosby ..													
†Palmer ..	N.Y. S.B. Co.	1919	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Herbert ..													
Schenck ..	Cramp, Phil.	1919	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Leary ..													
Dickerson ..	Cramp, Phil.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
J. Fred Talbot ..													
Cole ..	Cramp, Phil.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Ellis ..													
Bernadou ..	Cramp, Phil.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Dupont ..													
Biddle ..	Cramp, Phil.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Blakeley ..													
Barney ..	Cramp, Phil.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Breckinridge ..													
Roper ..	Cramp, Phil.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Elliot ..													
Greer ..	Cramp, Phil.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Tarbell ..													
Upshur ..	Cramp, Phil.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Hamilton ..													
Ward ..	Cramp, Phil.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Kennison ..													
Kilty ..	Cramp, Phil.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
†Boggs ..													
Babbitt ..	Cramp, Phil.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Badger ..													
Tattnall ..	Cramp, Phil.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
†Lamberton ..													
Lea ..	Cramp, Phil.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Dorsey ..													
Dent ..	Cramp, Phil.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Waters ..													
Talbot ..	Cramp, Phil.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Rathburne ..													
Crane ..	Cramp, Phil.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Chew ..													
Schley ..	Cramp, Phil.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
†McKean ..													
†Colhoun ..	Cramp, Phil.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
†Stringham ..													
†Gregory ..	Cramp, Phil.	1918	314.4	31	9.8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
†Manley ..													
Allen ..	Cramp, Phil.	1917	315.5	30.7	9.5	..	1,020	20,000	32	3 4-in., 1 3-in. A.A.	12 21-in.	122	260
Allen ..													
Allen ..	Cramp, Phil.	1917	315.3	29.9	9.8	..	920	17,500	30	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	290
Allen ..													
DESTROYERS NOW	FITTED												
AS MINELAYERS—													
Preble ..	Bath Iron-works	1920	314.4	30.5	9	2	1,160	27,000	35	4 4-in., 1 3-in. A.A.	—	107	375
Pruitt ..													
Seard ..	Cramp	1920	314.4	30.5	9	2	1,160	27,000	35	4 4-in., 1 3-in. A.A.	—	107	375
Tracy ..													
Ramsay ..	Newport News S. Co.	1919	314.4	30.5	9	2	1,160	25,000	35	4 4-in., 1 3-in. A.A.	—	120	286
Gamble ..													
Breese ..	Newport News S. Co.	1919	314.4	30.5	9	2	1,160	25,000	35	4 4-in., 1 3-in. A.A.	—	120	286
Montgomery ..													

† Minesweepers.

‡ Equipped as targets, wireless controlled.

§ Destroyer transports.

United States—*continued.*

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Displacement. Surface.	Displacement. Submerged.	Horse-Power.	Maximum Speed. Surface.	Maximum Speed. Submerged.	Armament.	Torpedo Tubes.	Complement.	Fuel Oil.
			Length. (Extreme.)	Beam.	Draught.										
			Feet.	Feet.	Feet.		Tons.			Knots.					Tons.
SUBMARINES—<i>continued.</i>															
Herring ..	Portsmouth Navy Yard.	1942	307	27	..	2	1,526	6,500	21	1 3-in.			10 21-in.	..	..
Kingfish ..							800	..	..				6 21-in.	..	..
Shad ..	Electric Boat Co. Portsmouth Navy Yard.	1941	..	..	..	..	..	..	..	..			6 21-in.	..	..
Mackerel ..							..	..	..				6 21-in.	..	..
Marlin ..	Electric Boat Co.	1936-1937	300½	25	13-8	2	1,330	..	17 8	1 3-in.			6 21-in.	54	..
Perch ..							1,998	..	..				6 21-in.	..	..
Pickrel ..	Portsmouth Navy Yard.	1940	298	27	13-3	2	1,475	..	..	1 3-in.			10 21-in.	..	..
Permit ..							..	..	..				10 21-in.	..	..
Plunger ..	Mare Island Navy Yard.	1941	298	27	13-3	2	..	..	..	1 3-in.			10 21-in.	..	..
Pollack ..							..	..	..				10 21-in.	..	..
Pompano ..	Electric Boat Co.	1941	298	27	13-3	2	..	..	..	1 3-in.			10 21-in.	..	..
Tambor ..							..	..	..				10 21-in.	..	..
Tautog ..	Portsmouth Navy Yard.	1941	298	27	13-3	2	..	..	..	1 3-in.			10 21-in.	..	..
Thresher ..							..	..	..				10 21-in.	..	..
Triton ..	Mare Island Navy Yard.	1941	298	27	13-3	2	..	..	..	1 3-in.			10 21-in.	..	..
Trout ..							..	..	..				10 21-in.	..	..
Tuna ..	Electric Boat Co.	1939	298	26	14½	2	1,450	..	17 8	1 3-in.			6 21-in.	55	..
Salmon ..							..	..	..				6 21-in.	..	..
Seal ..	Portsmouth Navy Yard.	1938	298	26	14½	2	1,450	..	17 8	1 3-in.			6 21-in.	55	..
Skipjack ..							..	..	..				6 21-in.	..	..
Snapper ..	Mare Island Navy Yard.	1939	298	26	14½	2	1,450	..	17 8	1 3-in.			6 21-in.	55	..
Stringray ..							..	..	..				6 21-in.	..	..
Sturgeon ..	Electric Boat Co.	1940	298	26	14½	2	1,450	..	17 8	1 3-in.			6 21-in.	55	..
Sargo ..							..	..	..				6 21-in.	..	..
Saury ..	Portsmouth Navy Yard.	1939	298	26	14½	2	1,450	..	17 8	1 3-in.			6 21-in.	55	..
Spearfish ..							..	..	..				6 21-in.	..	..
Sculpin ..	Mare Island Navy Yard.	1939	298	26	14½	2	1,450	..	17 8	1 3-in.			6 21-in.	55	..
Sailfish ..							..	..	..				6 21-in.	..	..
(ex-Squalus)	Electric Boat Co.	1939	298	26	14½	2	1,450	..	17 8	1 3-in.			6 21-in.	55	..
Swordfish ..							..	..	..				6 21-in.	..	..
Sea Dragon ..	Portsmouth Navy Yard.	1939	298	26	14½	2	1,450	..	17 8	1 3-in.			6 21-in.	55	..
Sea Lion ..							..	..	..				6 21-in.	..	..
Sea Raven ..	Electric Boat Co.	1939	298	26	14½	2	1,450	..	17 8	1 3-in.			6 21-in.	55	..
Seawolf ..							..	..	..				6 21-in.	..	..
Porpoise ..	Portsmouth Navy Yard.	1936	283	24-9	13	2	1,310	5,000	21	1 3-in.			6 21-in.	55	..
Pike ..							1,934	..	..				6 21-in.	..	..
Shark ..	Electric Boat Co.	1936	298	25-1	13-9	2	1,315	5,000	21	1 3-in.			6 21-in.	54	..
Tarpon ..							..	..	..				6 21-in.	..	..
Dolphin ..	Portsmouth Navy Yard.	1932	319	27-8	13	2	1,540	4,250	17 8	1 4-in., 1 M.			6 21-in.	58	..
Cachalot ..							2,215	875	..				6 21-in.	..	..
Cuttlefish ..	Portsmouth Navy Yard.	1934	271½	24-8	13	2	1,110	3,100	17 8	1 3-in. A.A., 1 M.			6 21-in.	45	..
Argonaut ..							1,650	800	..				6 21-in.	..	..
Narwhal ..	Portsmouth Navy Yard.	1928	381	33-8	15-4	2	2,710	3,175	14-6 8	2 6-in., 60 mines.			6 21-in.	86	185
Nautilus ..							4,080	1,200	..				6 21-in.	..	..
Bonita ..	Portsmouth Navy Yard.	1930	371	33-3	16	2	2,730	5,450	17 8-5	2 6-in.			6 21-in.	88	185
Bass ..							3,960	1,270	..				6 21-in.	..	..
Barracuda ..	Portsmouth Navy Yard.	1926	341-5	27	14-6	2	2,000	6,700	19 8	1 3-in. A.A., 2 M.			6 21-in.	87	160
S48 ..							2,506	1,200	..				6 21-in.	..	..
S47* ..	Lake T.B. Co., Bridgeport.	1922	267	21-8	13-5	2	1,000	2,000	14-8	1 4-in.			6 21-in.	38	237
S46* ..							1,458	1,500	11-0				6 21-in.	..	..
S45* ..	Bethlehem Shipbuilding Corp., Quincy Plant.	1925	225-3	20-5	16	2	850	1,200	14	1 4-in.			6 21-in.	44	154
S44* ..							1,126	1,500	10-4				6 21-in.	..	..
S43* ..	Bethlehem Shipbuilding Corp., Union Plant.	1924	219-3	20-5	16	2	800	1,200	14-5	1 4-in.			6 21-in.	42	140
S42* ..							1,062	1,500	11				6 21-in.	..	..
S41* ..	Bethlehem Shipbuilding Corp., Union Plant.	1923	219-3	20-5	16	2	800	1,200	14-5	1 4-in.			6 21-in.	42	140
S40* ..							1,062	1,500	11				6 21-in.	..	..
S39* ..	Bethlehem Shipbuilding Corp., Union Plant.	1923	219-3	20-5	16	2	800	1,200	14-5	1 4-in.			6 21-in.	42	140
S38* ..							1,062	1,500	11				6 21-in.	..	..
S37* ..	Bethlehem Shipbuilding Corp., Union Plant.	1923	219-3	20-5	16	2	800	1,200	14-5	1 4-in.			6 21-in.	42	140
S35* ..							1,062	1,500	11				6 21-in.	..	..
S34* ..	Bethlehem Shipbuilding Corp., Union Plant.	1923	219-3	20-5	16	2	800	1,200	14-5	1 4-in.			6 21-in.	42	140
S33* ..							1,062	1,500	11				6 21-in.	..	..
S32* ..	Bethlehem Shipbuilding Corp., Union Plant.	1923	219-3	20-5	16	2	800	1,200	14-5	1 4-in.			6 21-in.	42	140
S31* ..							1,062	1,500	11				6 21-in.	..	..
S30* ..	Bethlehem Shipbuilding Corp., Union Plant.	1920	219-3	20-5	16	2	800	1,200	14-5	1 4-in.			6 21-in.	42	140
							1,062	1,500	11				6 21-in.	..	..

* Designed by Electric Boat Co., Groton, Conn.

United States—*continued.*

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Displacement.	Surface.	Submerged.	Horse-Power.	Maximum Speed. Surface.	Submerged.	Armament.	Torpedo Tubes.	Complement.	Fuel Oil.
			Length. (Extreme).	Beam.	Draught.											
SUBMARINES— <i>continued.</i>			Feet.	Feet.	Feet.		Tons.				Knots.					Tons.
S28* }	Bethlehem Shipbuilding Corp., Quincy Plant.	1923	219·3	20·5	16	2	800	1,200	14·5	1 4-in.	4 21-in.	42	140			
S23* }		1923					1,062	1,500	11							
S20* }		1922														
S18* }		1923														
S17 }	Lake T.B. Co., Bridgeport.	1921	231	21·5	13	2	790	2,000	15·25	1 4-in.	4 21-in.	38	123			
S16 }		1920					1,092	1,200	9							
S15 }		1921														
S14 }		1921														
S13 }	Portsmouth Navy Yard.	1923	231	21·8	13	2	790	2,000	14·75	1 4-in.	5 21-in.	38	123			
S12 }		1923					1,092	1,200	9							
S11 }		1923														
R20* }		1923														
R18* }	Union, I.W.	1918	186·1	17·5	14·5	2	530	880	13·5	1 3-in.	4 21-in.	30	63			
R16* }							680	934	10·5							
R15* }																
R14* }																
R13* }	Fore River S.B. Co.	1919	186·1	17·5	14·5	2	530	880	13·5	1 3-in.	4 21-in.	30	63			
R12* }							680	934	10·5							
R11* }																
R10* }																
R9* }	Fore River S.B. Co.	1919	186·1	17·5	14·5	2	530	880	13·5	1 3-in.	4 21-in.	30	63			
R7* }							680	934	10·5							
R6* }																
R5* }																
R4* }	Fore River S.B. Co.	1918	172·3	17·5	14·4	2	480	880	14	1 3-in.	4 21-in.	30	73			
R2* }							624	740	10·5							
R1* }																
O10* }	Fore River S.B. Co.	1918	172·3	17·5	14·4	2	480	880	14	1 3-in.	4 21-in.	30	73			
O8* }							624	740	10·5							
O7* }																
O6* }																
O4* }																
O3* }																
O2* }																

* Designed by Electric Boat Co., Groton, Conn.

The machinery contractors for the vessels of the E. B. Co. Design built in yards other than the Navy Yards were the New London Ship and Eng. Co., Groton, Conn., and the hulls were built under sub-contract from the E. B. Co.

SHIP-BORNE AIRCRAFT

SHIP-BORNE AIRCRAFT—BRITISH.

Name.	Type.	Dimensions				Weight.		Engine.				Performance.					Armament		
		Span.	Length.	Height.	Wing Area	Empty.	Loaded.	Name.	Type.	B.H.P. at Speed at Ht.			Speed at Ht.		Service Ceiling.	Range.		Initial Climb.	
										B.H.P.	R.P.M.	ft.	M.P.H.	ft.					
Blackburn Skua.	Single-engine, 2-seat fighter-diver-bomber.	46 2	35 7	14 2	312	5,490	8,228	Bristol Perseus XII.	9-cyl. sleeve-valve air-cooled radial.	745	2,400	6,500	225	6,500	20,200	..	..	..	1 fixed forward M.G. and 1 swivelling rear gun.
Hawker Hurricane 2C.	Single-engine single-seat fighter.	40 0	31 5	13 1	..	..	7,550	Rolls-Royce Merlin XX.	12-cyl. V liquid-cooled in-line.	1,280	..	..	334	21,000	35,000	750	212	..	4 20-mm. Hispano cannon fixed, firing forward.
Hawker Hurricane I.	Single-engine single-seat fighter.	40 0	31 5	13 3	257½	4,670	6,600	Rolls-Royce Merlin III.	12-cyl. V liquid-cooled in-line.	1,080	3,000	16,250	325	..	36,000	..	..	..	8 Browning M.Gs fixed, firing forward.
Fairey Fulmar.	Single-engine 2-seat fighter.	46 0	40 3	11 6	364	..	..	Rolls-Royce Merlin X.	12-cyl. V liquid-cooled in-line.	1,145	..	..	244	..	..	..	..	..	8 forward fixed machine/guns.

Fairey Swordfish.	Single- engine 2 2/3-seat torpedo- spotter reconnais- sance biplane.	45	6	36	4	12	10	..	4,195	7,720	Bristol Pegasus III, M3.	9-cyl. air- cooled radial.	655- 890	..	..	154	7,000	19,250	..	..	1,120	Bombs, a tor- pedo or mine. 1 fixed Vickers gun firing through air- screw and Lewis gun in rear cockpit.
Fairey Albacore.	Single- engine 2 2/3-seat torpedo- spotter reconnais- sance biplane.	50	0	39	10	14	2	..	..	..	Bristol Taurus II.	14-cyl. sleeve- valve air- cooled radial.	1,065	..	5,000	..	..	..	..	..	..
Vickers- Armstrongs Walrus II.	Single- engine fleet spotter amphibian.	45	10	37	7	15	3	610	4,900	7,200	Bristol Pegasus VI.	9-cyl. air- cooled radial.	..	..	..	124 135	Sea level 4,750	18,500	600	..	1,050	2 M. Gs.
Vickers- Armstrongs Seafire.	Single- engine single- seat fighter.	36	10	29	11	11	5	242	..	..	Rolle- Royce Merlin XLV.	12-cyl. V liquid- cooled in-line.	1,300	..	..	..	..	..	..	..	2 20-mm. can- non and 4 303-in. Browning M. G	

SHIP-BORNE AIRCRAFT—UNITED STATES OF AMERICA.

Name.	Type.	Dimensions.				Weight.		Engine.				Performance.				Armament.		
		Span.	Length.	Height.	Wing Area.	Empty.	Loaded.	Name.	Type.	B.H.P. at Speed at Ht.			Speed at Ht.		Service Ceiling.		Range.	Initial Climb.
										ft. in.	ft. in.	ft. in.	sq. ft.	lb.					lb.	ft.	M.P.H.	ft.	M.P.H.	Miles at M.P.H.	Ft./min.
Grumman Avenger.	Single-engine.	53 0	37 0	..	..	..	..	Wright Double Cyclone.	Air-cooled radial.	1,600	..	..	280	Above 20,000	1,400	..	1 21-in. torpedo or a 2,000 lb. bomb load.
Grumman Wildcat (Martlet).	Single-engine single-seat fighter.	38 0	28 10	9 2½	260	4,649	5,876	Wright Cyclone R-1820 G-205A.	Air-cooled radial.	1,000	..	13,500	325	23,000	1,150	..	6 50-in. M. Gs.	
Douglas SB1 Dauntless.	Single-engine 2-seat dive bomber.	41 6	31 8	13 1	323.8	5,406	8,157	Wright Cyclone R-1820-32.	9-cyl. air-cooled radial.	950	..	..	275	23,000	1,000	..	Not fully released, but 2 50-in. M. Gs. firing forward, 1 500-lb. bomb and smaller ones.
Brewster SB2A-1 Buccaneer (Bermuda).	Single-engine 2-seat scout dive bomber.	47 0	39 6	15 3	..	7,490	12,256	Wright Double Row Cyclone GE-2600	Radial.	1,600	..	..	284	23,000	695	..	4 5-in. guns in wings and 2 in fuselage. 2 3-in. anti-aircraft guns on fuselage. 2 500-lb. and 1 1,000-lb. bomb.
Vought Sikorsky SB3U-3 Vindicator (Okeechobee).	Single-engine 2-seat scout and dive bomber monoplane.	42 0	33 11½	9 9½	305.8	4,500	6,500	P & W R-1835-3B4G	Two-row 14-cyl. radial.	750	..	8,900	257	23,200	700	..	4 303-in. M. Gs. in wings and a single 303-in. in rear cockpit. Bomb load 1,000 lb.	

Curtiss SO3C-1 Seagull.	Single- engine 2-seat scout observa- tion float seaplane.	38 0 36 9 15 0	..	4,234	5,729	Ranger V-770-6.	12-cyl. inverted V air- cooled.	520	..	..	..	..	..	..	..	..
Curtiss SBC-4 Cleveland.	Single- engine 2-seat dive- bomber.	34 0 27 5 10 34	317	4,456	6,000	B-1820- Gs.	9-cyl. air- cooled radial.	1,000	..	240	17,000	27,000	730	..	..	1 fixed forward and 1 swivel- ling M.G. 1 1,100-lb. bomb under fuselage and 1 100-lb. under each wing.
Brewster F2A-2 Buffalo.	Single- engine single- seat fighter.	35 0 26 2 12 0	208-9	..	6,840	Wright Cyclone GG-1320 -G-205A	9-cyl. air- cooled radial.	1,200	..	330	15,000	24,500	650	280	1,930	4 .5-in. calibre M.Gs. Pro- vision for 2 100-lb. bombs under wings.
Curtiss SBC-1 Helldiver.	Single- engine 2-seat dive- bomber.	49 8 35 2	422	7,868	10,982	Wright Double- Row Cyclone 14" GH -2600- B6.	14-cyl. air- cooled radial.	1,750	..	..	..	..	..	..	..	Internal bomb stowage.
Douglas TBD-1 Devastator.	Torpedo carrier.	50 0 35 6	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ryan SOB-1	Single- engine 2-seat catapult scout observa- tion float seaplane.	..	..	..	..	Ranger.	12-cyl. inverted V in line.	..	..	..	..	..	..	..	..	..

SHIP-BORNE AIRCRAFT—GERMANY AND JAPAN.

Name.	Type.	Dimensions.				Weight.		Engine.			Performance.					Armament.			
		Span.	Length.	Height.	Wing Area.	Empty.	Loaded.	Name.	Type.	B.H.P. at Speed at Ht.			Speed at Ht.		Range.		Initial Climb.		
										ft. in.	ft. in.	ft. in.	sq. ft.	lb.				lb.	B.H.P.	R.P.M.	ft.	M.P.H.	ft.	Miles at	Speed M.P.H.	Ft./min.
Mitsubishi S-00.	Single-engine single-seat fighter.	39 6	28 5	9 0	256	..	5,140	Mitsubishi Kinsei.	14-cyl. air-cooled radial.	1,200	..	..	345	10,000	36,000	1,600	160	..	2 20-mm. cannon in wings and 2 7.7-mm. M.Gs. in motor cowling.
Aichi K-09.	Single-engine dive-bomber.	48 0	37 0	..	..	..	..	Aichi.	Radial.	900	..	..	..	..	..	..	..	..	2 fixed forward M.Gs. and 1 or 2 swivelling rear guns.
Mitsubishi G-07-1.	Single-engine 2 or 3-seat torpedo bomber.	50 9	33 11	..	..	..	8,500	Mitsubishi Kinsei 4C.	14-cyl. air-cooled radial.	900	..	..	195	10,000	28,000	470	..	..	1 7.7-mm. M.G. fixed forward or 2 swivelling 7.7-mm. M.Gs. in back position. Carries 750 lb. of bombs or a torpedo.
Nakajima G-06.	Single-engine 3-seater torpedo bomber.	49 0	33 0	..	..	..	7,300	Nakajima Kotobuki.	9-cyl. air-radial.	600	..	8,000	168	8,000	20,000	420 with torpedoes, 900 with bombs.	..	..	1 7.7-mm. M.G. in back cockpit. 900 lb. of bombs or a 1,700-lb. torpedo.
Mitsubishi K-06.	Single-engine 2-seat dive-bomber.	37 6	30 7	..	..	..	5,200	Mitsubishi Kinsei.	9-cyl. air-cooled radial.	730	..	..	200	10,000	28,000	..	..	..	2 fixed forward 7.7-mm. M.Gs. and 1 rear 7.7-mm. M.G.
Nakajima G-07.	Single-engine single-seat fighter.	35 6	25 6	..	..	..	4,300	Nakajima.	Air-cooled radial.	700	..	..	270	15,000	32,000	460	..	..	3 fixed forward 7.7-mm. M.Gs.

Nakajima SKT-97.	Single- engine 2-seat fighter reconnals- sance sea- plane.	36 0	83 6	..	..	5,300	Nakajima 93.	Alr- cooled radial.	750	..	..	220	13,120	27,000	325	..	..	2 fixed forward firing and 2 swivelling rear 7.7-mm M.Gs.
Arado Ar-196.	Single- engine 2-seat reconnals- sance sea- plane.	43 6	33 10	16 5	330	6,590	Bramo Fafur 323.	9-cyl. air- cooled radial.	920	..	..	193	13,000	23,000	670	158	980	2 forward fixed cannon, 2 for- ward fired M.Gs. and one movable rear M.G. Bombe can be car- ried under the wings.
Arado Ar-96.	Single- engine 2-seat bomber- torpedo reconnals- sance biplane- seaplane.	41 0	36 5	17 0	488.5	5,598	B.M.W. 132 Dc.	9-cyl. air- cooled radial.	880	..	..	187.5	..	23,945	..	..	1,312	1 forward fixed gun and 1 swivelling rear M.G. Can carry 6 110-lb. bombs below wings.
Heinkel He-114.	Single- engine 2-seat reconnals- sance sea- plane.	44 6	39 0	..	455	5,148	B.M.W. 132 N.	Alr- cooled radial.	865	..	..	208	11,550	22,960	540	..	..	1 forward fixed M.G. and 1 movable rear.
Meridionali Ro 44.	Single- engine single- seat biplane catapult fighter.	37 11	31 10	11 6	359	3,894	Piaggio "Stella" X.R.C.	Alr- cooled radial.	700	..	..	186	6,560	..	300	..	..	1 7.7-mm. M.G. firing for- ward.

REFERENCE SECTION.

MISCELLANEOUS.

DIARY OF NAVAL EVENTS IN 1942.

NOTE.—The dates given in this Diary are taken from accounts, both official and unofficial, which have been published in the Press. Dates derived from the latter cannot at present be guaranteed as accurate.

JANUARY.

- 2.—Japanese entered Manila and Cavite. Bardia retaken. R.A.F. attacked Brest and Naples.
- 3.—Loss of H.M.S. Neptune and Kandahar announced.
- 5.—Japanese landings on W. coast of Malaya. Halfaya bombarded from sea. R.A.F. attacked Brest.
- 6.—Combined naval and R.A.F. raid on Helle fjord. R.A.F. attacked Brest.
- 7.—R.A.F. attacked St. Nazaire and Brest.
- 8.—R.A.F. attacked Brest.
- 9.—Loss of H.M.S. Galatea announced. R.A.F. attacked Brest.
- 10.—Japanese began invasion of N.E. Indies. R.A.F. attacked Brest and Emden.
- 11.—R.A.F. attacked Brest.
- 14.—R.A.F. attacked Emden, Hamburg and Rotterdam.
- 15.—R.A.F. attacked Emden and Hamburg.
- 17.—R.A.F. attacked Emden and Bremen.
- 18.—Japanese captured Tavoy; loss of H.M. submarine Perseus announced.
- 19.—Loss of H.M. destroyer Vimiera announced.
- 20.—R.A.F. attacked Emden.
- 21.—R.A.F. attacked Emden and Wilhelmshaven.
- 22.—Japanese landed at Rabaul and Kavieng.
- 23.—Action in Macassar Straits; 15 Japanese transports sunk, 22 damaged. Japanese landed at Balikpapan. R.A.F. and F.A.A. attacked convoy in central Mediterranean. Loss of H.M. submarine H.81 announced.
- 25.—Japanese landed at Lae. R.A.F. attacked Brest.
- 26.—Destroyer action off Malayan coast: 1 enemy destroyer and H.M. destroyer Thanet sunk. R.A.F. attacked Brest and Emden.
- 27.—Loss of H.M.S. Barham (on November 25) announced. R.A.F. attacked Brest and Wilhelmshaven.
- 28.—R.A.F. attacked Wilhelmshaven and Rotterdam.
- 30.—Japanese landed on Amboina.
- 31.—U.S. naval and air raid on Marshall and Gilbert Islands. R.A.F. attacked Brest, Le Havre and St. Nazaire.

FEBRUARY.

- 1.—Japanese attempted landing at Corregidor.
- 2.—R.A.F. attacked Naples and Palermo. Japanese bombed Port Moresby.
- 3.—R.A.A.F. attacked Rabaul. Japanese bombed Port Moresby.
- 4.—Japanese bombed Port Moresby. British evacuated Derna.

- 5.—Loss of H.M. submarine *Triumph* announced.
- 6.—R.A.F. attacked Brest.
- 8.—Loss of H.M. destroyer *Matabele* announced.
- 10.—U.S. naval forces arrived Wellington (N.Z.). Japanese landed at Macassar. R.A.F. attacked Brest and Bremen.
- 11.—R.A.F. attacked Le Havre and Brest. *Scharnhorst*, *Gneisenau* and *Prinz Eugen* sailed from Brest.
- 12.—*Scharnhorst*, *Gneisenau* and *Prinz Eugen* passed up Channel to Germany.
- 13.—R.A.F. attacked Le Havre.
- 14.—R.A.F. attacked Le Havre.
- 15.—Singapore surrendered. U-boat sank Brazilian steamer *Buarque*. R.A.F. attacked St. Nazaire.
- 17.—German vessel *Spreewald* announced sunk by U-boat off Azores.
- 18.—U-boat sank Brazilian steamer *Olinda*.
- 19.—Japanese invaded Bali : attacked by Allied aircraft and naval force : 1 cruiser sunk ; 5 damaged ; 2 destroyers sunk ; 1 transport sunk, 6 damaged ; 1 Allied destroyer sunk. Loss of H.M. destroyer *Gurkha* announced. British convoy in English Ch. attacked : 2 E-boats and 1 bomber destroyed ; no British casualties.
- 20.—Japanese landed in Portuguese Timor.
- 21.—French battleship *Dunkerque* arrived Toulon from Oran.
- 22.—R.A.A.F. attacked Rabaul.
- 23.—H.M. submarine *Trident* torpedoed *Prinz Eugen* outside Trondheim fjord. U-boat shelled Californian coast. R.A.A.F. attacked Rabaul.
- 24.—U.S. naval raid on Wake Island. R.A.A.F. attacked Rabaul. Japanese bombed Port Moresby.
- 25.—R.A.F. attacked *Gneisenau* in Kiel. R.A.A.F. attacked Rabaul. Japanese bombed Port Moresby.
- 26.—R.A.F. attacked Kiel. *Tirpitz* located at Trondheim. R.A.A.F. attacked Rabaul.
- 27.—R.A.F. attacked Kiel and Wilhelmshaven. Loss of H.M. destroyer *Belmont* announced. British raid on French coast.
- 27-30.—Battle of Java Sea. Allied losses 5 cruisers (H.M.S. *Exeter* ; H.M.A.S. *Perth* ; U.S.S. *Houston* ; Dutch *Java* and *De Ruyter*) ; 6 destroyers (H.M.S. *Electra*, *Jupiter*, *Encounter*, *Stronghold* ; U.S.S. *Pope* ; Dutch *Kortenaer*).
- 28.—Japanese bombed Port Moresby. Japanese landed in Java.

MARCH.

- 2.—Enemy aircraft raided Suez Canal.
- 3.—U.S. Army Air Force sank thousands of troops in transports and 30,000 tons Japanese shipping in Subic Bay.
- 4.—U.S. squadron attacked Marcus Island. H.M.A.S. *Yarra* sunk in Indian Ocean.
- 5.—Japanese aircraft raided Port Moresby. Repeated on 7, 9, 10, 13, 14, 19, 20, 21, 23, 24, 25, 27, 28, and 30th.
- 7.—Rangoon evacuated.
- 8.—Japanese entered Rangoon. Japanese landed at Salamaua and Lae. R.A.F. raided Le Havre.
- 9.—*Tirpitz* left Trondheim ; attacked by naval aircraft. Japanese occupied Surabaya.

- 10.—Allied aircraft attacked shipping, Salamaua, and other bases ; more than 20 Japanese ships put out of action.
- 12.—Allied aircraft attacked Rabaul. R.A.F. attacked Kiel.
- 14.—Action in English Channel : 1 E-boat blown up, 1 sunk. British convoy in North S. attacked : 3 E-boats sunk, 2 damaged. H.M. destroyer Vortigern lost.
- 16.—Naval and R.A.F. raid on Rhodes.
- 20.—R.A.A.F. attacked shipping at Rabaul : 2 cruisers damaged.
- 22.—British convoy from Alexandria to Malta attacked ; 3 enemy ships damaged, including battleship Littorio ; slight damage to British ships. Loss of H.M. submarine P.38 announced. R.A.A.F. attacked Rabaul.
- 23.—Sinking of two Italian submarines in Mediterranean by British submarines announced.
- 27.—St. Nazaire raid. Dock gate rammed by H.M.S. Campbelltown.
- 29.—German attack on British convoy for Murmansk. H.M.S. Trinidad and Eclipse dispersed enemy.
- 30.—Loss of H.M.S. Naiad announced.

APRIL.

- 1.—R.A.F. attacked Le Havre.
- 2.—R.A.F. attacked Le Havre.
- 3.—Loss of H.M. destroyer Heythrop announced.
- 5.—R.A.F. attacked Le Havre. Japanese aircraft attacked Colombo and sank H.M.S. Cornwall and Dorsetshire in Indian Ocean. Japanese bombed Port Moresby.
- 6.—Japanese bombed Coconada and Vizagapatam ; sank several merchant vessels in Indian Ocean. Japanese landed Bougainville and bombed Port Moresby.
- 7.—Loss of H.M. destroyer Havock and submarine Tempest announced.
- 8.—R.A.F. attacked Le Havre and Hamburg. Japanese landed on Lorengau.
- 9.—Japanese bombed Trincomalee. H.M.S. Hermes sunk in Indian Ocean. Italian 10,000-ton cruiser sunk by British submarine in Mediterranean.
- 10.—R.A.F. attacked Le Havre. Japanese bombed Port Moresby. Japanese landed on Billiton Island and on Cebu.
- 12.—R.A.F. attacked Turin, Genoa and Le Havre.
- 13.—R.A.F. attacked Japanese forces in Port Blair, 13 flying boats destroyed.
- 14.—R.A.F. attacked Le Havre.
- 15.—R.A.F. attacked St. Nazaire and Le Havre.
- 16.—R.A.F. attacked Lorient and Le Havre.
- 17.—R.A.F. attacked St. Nazaire, Le Havre and Hamburg. Japanese bombed Port Moresby.
- 18.—Loss of Fighting French submarine Surcouf announced. Curaçoa shelled by U-boat. R.A.F. attacked Port Blair.
- 22.—Loss of H.M.A. destroyer Vampire announced. Small raid on Boulogne.
- 25.—Loss of H.M. destroyer Southwold announced. Japanese bombed Port Moresby.
- 26.—Japanese bombed Port Moresby.

- 27.—R.A.F. attacked Trondheim.
- 28.—R.A.F. attacked Trondheim.
- 28.—R.A.F. attacked Kiel.
- 29.—R.A.F. attacked Trondheim.
- 30.—H.M.S. Edinburgh damaged by U-boat in Arctic.

MAY.

- 1.—German destroyers attacked convoys to and from Russia. R.A.A.F. attacked Rabaul and Leros.
- 2.—H.M.S. Edinburgh sunk. R.A.A.F. attacked Rabaul. Japanese bombed Port Moresby.
- 3.—Gneisenau located at Gdynia, Scharnhorst at Kiel, and Prinz Eugen at Trondheim, all damaged. Japanese bombed Port Moresby.
- 4.—Battle of Coral Sea ; American attack on Japanese ships at Tulagi. R.A.A.F. attacked Rabaul. Japanese bombed Port Moresby.
- 5.—Allied force landed in Madagascar.
- 6.—French cruiser and submarine sunk in Diego Suarez bay. Loss of H.M. destroyer Jaguar announced. R.A.A.F. attacked Rabaul. Corregidor surrendered.
- 7.—Coral Sea Battle : Americans bombed Japanese squadron in Louisiades, sank one aircraft carrier ; Japanese sank American destroyer and naval tanker. British warships entered harbour of Diego Suarez. R.A.F. attacked convoy off Dutch coast ; 5 ships out of 12 hit.
- 8.—Coral Sea Battle ; cross air attacks ; Japanese aircraft carrier damaged, U.S.S. Lexington sunk. R.A.A.F. attacked Rabaul. Japanese bombed Port Moresby.
- 9.—Japanese bombed Port Moresby.
- 11.—Two Japanese submarines sunk by aircraft off Australian coast. H.M. destroyers Lively, Kipling, and Jackal sunk in Mediterranean. U-boat sank cargo ship in St. Lawrence. Japanese bombed Port Moresby.
- 13.—U-boat sank Mexican tanker. R.A.A.F. raided Rabaul.
- 14.—Franco-American agreement *re* warships at Martinique. R.A.A.F. attacked Rabaul. Japanese bombed Port Moresby.
- 17.—Loss of H.M. corvette Hollyhock announced. Japanese bombed Port Moresby. R.A.F. attacked Prinz Eugen off southern Norway.
- 20.—U-boat sank Mexican tanker. Japanese bombed Port Moresby.
- 22.—R.A.A.F. attacked Rabaul.
- 25.—R.A.A.F. attacked Rabaul. Japanese bombed Port Moresby. Enemy landing attempt on Libyan coast frustrated by naval forces.
- 28.—Mexico declared war on Axis as from May 22.
- 30.—Japanese submarine penetrated into Diego Suarez harbour.
- 31.—4 Japanese midget submarines penetrated into Sydney harbour ; all destroyed.

JUNE.

- 1.—Loss of H.M. cruiser Trinidad announced. Two Japanese naval officers shot in Madagascar.
- 3.—Japanese bombed Dutch Harbour. Midway Battle. U.S. Army aircraft attacked Japanese fleet, hit one cruiser, one transport. Japanese occupied Attu.

- 4.—Midway Battle ; 4 Japanese aircraft carriers sunk, two battleships damaged. U.S.S. Yorktown damaged.
- 5.—Midway Battle ; Japanese fleet and transports retreating ; weather bad ; one cruiser damaged. Arrival of very large convoy in India announced.
- 8.—H.M. the King reviewed Home Fleet and U.S. " task-force " in British waters. Midway Battle ; two Japanese heavy cruisers and a destroyer sunk. U.S. aircraft carrier Yorktown and destroyer Hammann sunk by Japanese submarine.
- 9.—Sinking of Italian destroyer, 3 supply ships, 1 small explosives vessel by H.M. submarine Turbulent, in Mediterranean announced.
- 13.—Convoys for Malta sailed from Alexandria and Gibraltar. Loss of H.M. submarine Olympus announced.
- 14.—Air attack on convoy from Alexandria. Italian fleet located at sea.
- 15.—British submarine sank Italian 8-inch cruiser and torpedoed battleship Littorio. Two Italian destroyers and one U-boat also sunk and 65 aircraft destroyed. Western convoy attacked by air, E-boats and U-boats. H.M. cruiser Hermione, H.M. destroyers Bedouin, Hasty, Grove, and Airedale, H.M.A.S. Nestor, and Polish destroyer Kuja-wiak sunk. Losses suffered by convoy. Eastern convoy turned back for Alexandria. U.S. aircraft attacked Attu, damaged 3 Japanese cruisers, one gunboat, one transport.
- 16.—Western convoy reached Malta.
- 17.—H.M. destroyer Wild Swan sunk in Atlantic by German bombers, 6 shot down.
- 18.—American aircraft sank Japanese transport in Kiska harbour.
- 20.—Vancouver Island shelled by Japanese submarine.
- 21.—Tobruk captured by Axis. Japanese landing on Kiska announced.
- 25.—R.A.F. attacked Bremen.
- 27.—U.S. bombers attacked Wake Island. R.A.F. attacked Bremen.
- 29.—R.A.F. attacked Bremen.

JULY.

- 1.—Germans captured Sevastopol.
- 2.—U.S. aircraft attacked 3 Japanese transports off Agattu.
- 4.—U.S. navy aircraft torpedoed 4 Japanese destroyers in Aleutian Islands.
- 5.—U.S. aircraft sank a 5th Japanese destroyer in Aleutian Islands.
- 9.—Russian submarine attacked Tirpitz in Barents Sea.
- 10.—Japanese announced safe arrival of convoy in occupied Aleutian Islands.
- 21.—Japanese landed at Gona (Papua). U.S. submarine sank three Japanese destroyers at Kiska.
- 22.—U.S. aircraft attacked Kiska.
- 26.—R.A.F. attacked Hamburg.
- 28.—R.A.F. attacked Hamburg.
- 29.—U.S. aircraft attacked Kiska.
- 30.—Japanese occupied islands between Timor and New Guinea.

AUGUST.

- 3.—Japanese aircraft attacked U.S.S. Kane off Atka unsuccessfully. U.S. aircraft attacked Kiska.
- 7.—American force landed in Guadalcanal-Tulagi area (Solomon Islands).

- 8.—Night action off Guadalcanal. H.M.A.S. Canberra, U.S.S. Quincy, Vincennes and Astoria sunk. U.S. cruiser and destroyers bombarded Kiska.
- 9.—U.S. aircraft attacked Kiska, hit 3 cargo ships, and a destroyer.
- 10.—British convoy sailed eastward from Gibraltar.
- 11.—U-boat sank H.M.S. Eagle, with Mediterranean convoy. H.M.S. Wolverine sank U-boat. Convoy attacked by air. H.M.S. Pathfinder and Ithuriel sank U-boat. R.A.F. attacked Cagliari and Catania. U.S. bombers attacked Italian cruisers in Navarino.
- 12.—H.M.S. Manchester, Cairo, and Foresight torpedoed and sunk, with Mediterranean convoy. Convoy attacked by air; 66 enemy aircraft destroyed. Losses in convoy.
- 13.—Convoy reached Malta. Ships of Mediterranean Fleet bombarded Rhodes.
- 15.—U-boats sank five Brazilian ships, including troopship.
- 17.—American marines raided Makin Island.
- 19.—Raid on Dieppe. H.M. destroyer Berkeley lost. Another Brazilian ship sunk. Washington announced U.S. submarine had sunk Japanese cruiser or destroyer in Aleutian Islands.
- 22.—Brazil declared war on Germany and Italy. Loss of H.M. submarine Upholder announced.
- 23.—American bombers attacked Japanese fleet in Solomons: hits reported on 6 ships.
- 24.—American bombers attacked Japanese convoy north of Milne Bay; sank one transport, damaged one destroyer.
- 26.—Japanese landed at Milne Bay, from 3 transports, 1 cruiser and one destroyer.
- 29.—Japanese warships entered Milne Bay and withdrew part of forces. R.A.F. attacked shipping off Crete.
- 30.—R.A.F. attacked enemy tanker in Mediterranean. U.S. expedition from Dutch Harbour landed in Andreanos Islands to establish airfield.

SEPTEMBER.

- 4.—Russian warships in Baltic sank 4 transports and 2 destroyers. U.S. aircraft attacked Kiska.
- 5.—Russian submarine in Arctic reported having sunk one German transport, and torpedoed another in a convoy of two.
- 7.—Russian aircraft sank transport in Barents Sea.
- 8.—British light forces attacked enemy supply ships and escorts off Cherbourg and in Dover Strait.
- 9.—British convoy bound for Murmansk sighted by U-boats and enemy aircraft near Bear Island.
- 12.—Arctic convoy attacked by U-boats.
- 13.—Sea-borne raid on Tobruk, H.M.S. Sikh and Zulu sunk. Arctic convoy attacked by U-boats and air forces.
- 14.—Arctic convoy attacked by U-boats and air forces. British fighters shot down 24 German aircraft. U.S. aircraft attacked Kiska, sank 2 Japanese minesweepers, damaged 3 submarines, 3 supply ships, and many small craft. Loss of H.M.C. patrol vessel Raccoon announced. U.S. heavy bombers attacked Axis ships in Suda Bay.
- 15.—Arctic convoy attacked by U-boat and aircraft. U.S.S. Wasp sunk by Japanese submarine in Solomons.

- 16.—Arctic convoy arrived in Russian waters, 70% safe. Escort turned back to protect homeward-bound convoy.
- 17.—Loss of corvette H.M.C.S. Charlottetown announced. R.A.F. sank Axis supply ship, Central Mediterranean. Italians admitted loss of submarine. Homeward-bound Arctic convoy attacked by U-boats. H.M.S. Somali and Leda sunk by torpedoes.
- 20.—H.M.C.S. Assinibone sank U-boat, western Atlantic.
- 21.—Loss of H.M.C.S. Ottawa and H.M. submarine Urge announced. Coastal Command announced 4 recent successful attacks on U-boats, Bay of Biscay.
- 22.—Loss of H.M. trawler Waterfly announced.
- 23.—R.A.F. attacked Flensburg and convoy off Dutch coast; 3 ships hit.
- 24.—Italian aircraft attacked Gibraltar. U.S. aircraft attacked Kiska.
- 25.—U.S. and Canadian aircraft attacked Japanese submarines in Kiska.
- 28.—Loss of H.M. submarine Thorn announced.
- 30.—Light forces sank enemy supply ship off Terschelling. One British M.G.B. lost. Sinking of 4 U-boats off Canadian coast during summer by H.M. Canadian Navy announced.

OCTOBER.

- 1.—R.A.F. attacked Flensburg. U.S. aircraft attacked Kiska. Russian warship reported sinking two German transports in Baltic.
- 2.—U.S. aircraft attacked Kiska, damaged two cargo ships.
- 3.—U.S. bombers attacked shipping in Navarino; hit two ships. R.A.F. torpedoed supply ship in Ionian Sea.
- 4.—Raid on Sark. U.S. Naval aircraft bombed and torpedoed Japanese cruiser, landing troops in Guadalcanal.
- 5.—Action between light forces off Belgian coast; one E-boat sunk; one British boat missing. Submarine successes in Mediterranean announced; British submarine torpedoed two supply ships, Greek submarine sank one supply ship. American carrier-based aircraft attacked Japanese ships off Shortland Islands; one heavy cruiser and four other ships hit with bombs. American land-based aircraft attacked six Japanese destroyers landing troops at Guadalcanal; sank one, damaged one. U.S. aircraft attacked Kiska, one cargo ship sunk.
- 6.—R.A.F. damaged German minesweeper off French coast. U.S. aircraft attacked Kiska.
- 8.—Russian warships reported sinking two German transports in Baltic. American aircraft hit Japanese cruiser, Kako class, with torpedo and bombs off Guadalcanal. U.S. aircraft attacked Kiska.
- 9.—R.A.F. attacked Benghazi. U.S. aircraft attacked Japanese cruisers and destroyers near New Georgia Island. U.S. aircraft attacked Kiska. Loss of U.S. Coastguard Cutter Muskeget announced.
- 10.—Loss of H.M.S. Coventry announced. U.S. aircraft attacked Kiska.
- 11.—U.S. cruisers and destroyers sank three Japanese cruisers and five destroyers near Savo Island. U.S. aircraft attacked Kiska. Russian warships sank five German transports in Baltic. Allied bombers attacked shipping south of Crete. R.A.F. hit Italian destroyer with bomb in Mediterranean.
- 12.—R.A.F. attacked Tobruk and destroyer 50 miles north of Derna.

- American land-based aircraft hit Japanese cruiser with bomb off New Georgia.
- 13.—Japanese bombarded U.S. positions in Guadalcanal from the sea.
 - 14.—Light forces sank one R-boat and one supply ship, damaged one torpedo boat in Channel. Italians admitted loss of submarine in Atlantic. British light forces in North Sea sank one E-boat, damaged two more. R.A.F. bombed two enemy minesweepers off French coast. Allied aircraft attacked Tobruk. Washington announced U.S. submarine had sunk one Japanese cruiser, four other ships, in Far East. U.S. aircraft attacked Kiska.
 - 15.—R.A.F. attacked Le Havre and hit two armed trawlers off French coast. Sinking of merchant ship in St. Lawrence announced. R.A.F. attacked Tobruk. Japanese landed reinforcements in Guadalcanal.
 - 16.—Sinking of three supply ships in Mediterranean by British submarines announced. U.S. aircraft attacked two Japanese destroyers north-west of Kiska ; reported both hit.
 - 17.—H.M. corvette *Gloxinia* shot down Me.109 in Mediterranean.
 - 18.—Russian Black Sea marines landed in rear of Rumanians and re-embarked without loss after damaging raid. R.A.F. attacked Tobruk and hit enemy merchant vessel north-east of Pantellaria.
 - 19.—R.A.F. attacked Tobruk. German train-ferry torpedoed between Sassnitz and Treileborg by unidentified submarine.
 - 20.—Allied aircraft attacked shipping near Lampedusa.
 - 21.—Sinking of four Axis supply ships in Mediterranean by British submarine announced. Russians sank Rumanian destroyer in Black Sea and three enemy transports in Gulf of Finland. Sinking of U-boat by U.S. flying-boat operating from Iceland announced. Admiralty announced H.M.S. *Anson* and H.M.S. *Howe* in service. U.S. aircraft attacked Lorient.
 - 22.—Russians destroyed sixteen enemy ships, captured one, on Lake Ladoga. Admiralty announced four Axis supply ships sunk in Mediterranean by submarines. R.A.F. attacked Genoa.
 - 23.—British sea-borne attack on Mersa Matruh area. R.A.F. attacked Genoa and Turin. Australian bombers attacked Rabaul. U.S. troops landed on Goodenough Island, in D'Entrecasteaux Group.
 - 25.—British submarines' successes in Mediterranean announced ; twelve enemy ships sunk or damaged. R.A.F. destroyed ship off Tobruk. Australian bombers attacked Rabaul, U.S. bombers attacked Hong Kong. Japanese destroyer sank fleet tug U.S.S. *Seminole* and patrol boat off Tulagi. U.S. marine dive-bombers sank two Japanese destroyers off Guadalcanal, out of three in action with two U.S. minesweepers.
 - 26.—Loss of H.M. trawler *Lord Stonehaven* announced. American bombers and torpedo aircraft attacked Japanese fleet in Solomons area, hit two aircraft carriers, two battleships, three cruisers. Japanese air force attacked U.S. fleet, sank U.S.S. *Hornet*, aircraft carrier, and *Porter*, destroyer.
 - 27.—R.A.F. attacked Flensburg and Mersa Matruh. U.S. aircraft attacked Kiska. Japanese troops withdrew from Goodenough.
 - 28.—Allied aircraft attacked Hong Kong. Torpedo aircraft attacked merchant vessel, Central Mediterranean.
 - 29.—U.S. aircraft attacked Rabaul, hit Japanese heavy cruiser, which blew up.

- 30.—Loss of H.M. destroyer Veteran announced. Russian warships sank two transports in Baltic.
- 31.—French submarine sank two German supply ships off Norway. Two Japanese transports blown up off coast of Fukien by Chinese mines.

NOVEMBER.

- 1.—U.S. warships bombarded Japanese positions on Guadalcanal. M.T.Bs. attacked German convoys in English Channel; torpedoed three ships. Russian submarine sank Finnish vessel off Gdynia. Torpedo aircraft sank two Axis supply ships bound for Tobruk.
- 2.—Sinking of U-boat in Mediterranean by H.M. destroyer Wolverine announced. U.S. submarines' successes in Far East announced. Seven Japanese ships sunk. Bomber aircraft hit two Axis destroyers south-west of Crete; torpedo aircraft sank two Axis ships off Tobruk.
- 4.—British submarine secretly embarked General Giraud in French port.
- 6.—British submarine successes in Mediterranean announced; six Axis ships sunk. R.A.F. attacked Genoa.
- 7.—U.S. M.T.B. attacked Japanese destroyers off Lunga, probably sank one. U.S. bombers attacked Japanese light cruiser and ten destroyers, north of Guadalcanal. R.A.F. attacked Genoa.
- 8.—U.S. and British troops landed in French North Africa. British naval losses during operations were: Destroyers Broke and Martin; corvette Gardenia; cutters Walney and Hartland; sloop Ibis; dépôt ship Hecla; minesweeper Algerine; anti-aircraft escort ship Tynwald; small aircraft carrier Avenger. Dutch destroyer Isaac Sweers. American losses: five transports sunk, one destroyer, one tanker, and three transports damaged.
- 9.—Allied bombers attacked Le Havre, St. Nazaire, and Hamburg. French warships at Casablanca resisted American landing. Naval aircraft attacked two enemy cruisers in Central Mediterranean. M.T.Bs. torpedoed Axis tanker off Terschelling.
- 10.—American warships and aircraft bombarded Casablanca harbour. Battleship Jean Bart set on fire. Ramming of submarine in Atlantic by H.M.C.S. Assinbone announced. Allied bombers attacked five Japanese destroyers off New Georgia. Allied submarine sank Italian cruiser south of Sicily.
- 11.—Hits scored by Allied submarine on convoy of three cruisers and three destroyers east of Sicily.
- 12.—U.S. squadron bombarded Japanese in Guadalcanal, destroyed more than thirty landing craft. U.S.S. San Francisco and Buchanan damaged by Japanese aircraft off Guadalcanal. U.S. bombers hit four Japanese transports in Buin-Faisi area. U.S. submarines' successes in Far East announced. Seven Japanese merchant ships sunk, one destroyer torpedoed. U.S.S. Erie damaged by U-boat and beached on south coast of Curaçao.
- 13.—Sea action started off Guadalcanal.
- 14.—Guadalcanal action continued.
- 15.—Guadalcanal action ended. Japanese losses: two battleships, eight cruisers, six destroyers, twelve transports; others damaged. U.S. losses: cruisers, U.S.S. Juneau and Atlanta; destroyers, Cushing, Preston, Benham, Walke, Monssen, Laffey, Barton. Russian submarine torpedoed German tanker Ossag, Black Sea. Coastal Com-

- mand aircraft attacked supply ship off Norwegian coast. R.A.F. attacked Genoa. Prime Minister announced thirteen U-boats recently sunk off North Africa.
- 16.—Loss of H.M. submarine *Talisman* announced.
 - 17.—R.A.F. sank U-boat in Mediterranean, Naval aircraft sank enemy tanker off Tripoli.
 - 18.—Allied bombers attacked Benghazi. U.S. bombers sank Japanese cruiser and destroyer off Buna. R.A.F. attacked Turin.
 - 20.—R.A.F. bombed Axis ship off Tunisia; later torpedoed and sank it. R.A.F. attacked Turin. Benghazi occupied.
 - 21.—British submarines' successes in Mediterranean announced; Axis destroyer, tanker, and two supply ships sunk, others probably sunk.
 - 26.—Allied bombers sank two Japanese destroyers off Buna, damaged another.
 - 27.—French Toulon Fleet scuttled; four submarines escaped. R.A.F. attacked Portolago in Dodecanese.
 - 28.—Allied bombers attacked Tripoli. R.A.F. attacked Turin. French submarine *Isis* arrived Barcelona.
 - 29.—Two Japanese destroyers believed sunk off Papua by Allied bombers. R.A.F. attacked Turin.
 - 30.—U.S. naval forces sank two Japanese destroyers (or cruisers), four destroyers, two transports, one cargo ship, north-east of Guadalcanal. U.S.S. *Northampton* sunk. Axis vessel bombed near Pantellaria. French submarines *Marsouin* and *Casablanca* arrived Algiers.

DECEMBER.

- 1.—British cruiser and destroyer squadron sank two Italian destroyers and four transports bound for Tunisia. Admiralty announced enemy aircraft shot down by trawler *Finesse*. U.S. Navy announced submarines had sunk one Japanese destroyer, one tanker, three cargo ships. French submarine *Glorieux* arrived Oran. R.A.F. attacked Flensburg.
- 2.—H.M. destroyer *Quentin* sunk by Axis aircraft off Sicily. R.A.F. sank two ships in Axis convoy off Tunisia, destroyers sank torpedo boat of its escort.
- 3.—U.S. aircraft attacked ten Japanese cruisers and destroyers, 150 miles north of Guadalcanal; hit two cruisers and two destroyers.
- 4.—U.S. bombers attacked Naples, hit Italian battleship and two cruisers. R.A.F. attacked Tunis and Tripoli; set Italian destroyer on fire off Tunisia. Japanese warship which was hit on December 3 seen to sink; other three still burning.
- 5.—Loss of H.M. submarine *Unique* announced. H.M. trawlers *Canna*, *Bengali* and *Spaniard* lost at Lagos (explosion).
- 9.—R.A.F. attacked enemy shipping off Norway. Allied bombers attacked six Japanese destroyers carrying reinforcements to Buna, one destroyer hit.
- 11.—Light naval forces sank off Dieppe one supply ship and escorting vessel, others hit by gunfire. Announced that Greek submarine *Papanicolis* had sunk Axis freighter. U.S. bombers attacked eleven Japanese destroyers off Guadalcanal, hit five. U.S. bombers attacked Kiska.

- 12.—Loss of H.M. minesweeper Cromer and Greek submarine Triton announced. Allied submarines report torpedoing of four cargo ships carrying troops to Tunisia ; sinking of anti-submarine schooner, an armed cargo ship, and a tanker. U.S. local defence craft at Guadalcanal attacked Japanese destroyers ; sank one, set one on fire, damaged one. One U.S. M.T.B. lost.
- 13.—Coastal command aircraft torpedoed supply ships off Norway. Naval torpedo aircraft set Axis supply ships on fire off Sicily. R.A.F. attacked Tunis. Loss of U.S. transport President Coolidge announced, 4,000 on board, only four casualties.
- 14.—Loss of H.M. destroyer Penylan and trawler Jaspar announced. Allied bombers attacked Naples.
- 15.—Announced that British submarine shelled train on North African coast and following night sank small ship.
- 17.—Loss of H.M. submarine Unbeaten announced. Announced that enemy blockade runner (5,000 tons) intercepted in Atlantic. U.S. bombers attacked Bizerta and shipping at Tunis. U.S. aircraft attacked Kiska.
- 18.—U.S. bombers attacked Bizerta and Axis warship off Tunis. Announced that British submarine had torpedoed two supply ships in Gulf of Naples, and supply ship off Tunisia. Announced that British submarine had scored torpedo hit on large Japanese supply ship in Far Eastern waters. U.S. submarines' successes in Far East announced ; six ships sunk.
- 19.—Allied bombers attacked Japanese convoy off New Guinea, one light cruiser sunk.
- 20.—Japanese aircraft attacked Calcutta. U.S. aircraft attacked Kiska. U.S. bombers sank Japanese light cruiser off north-east New Guinea.
- 21.—Allied bombers attacked Tunis. Naval aircraft torpedoed merchant vessels and escort vessel off Sicily. Loss of H.M. trawler Ullswater announced.
- 23.—Announced that convoy had reached Malta. One U-boat destroyed by Greek ship Queen Olga and H.M.S. Petard. British submarines sank enemy supply ship off Tunis, and torpedoed destroyer and two supply ships off Sardinia.
- 25.—Allied bombers attacked Naples, Taranto, and Rabaul.
- 26.—U.S. dive-bombers sank Japanese supply ship off Wickham Island, 120 miles from Guadalcanal. British submarines sank two merchant ships in Mediterranean, destroyer also probably sunk.
- 28.—Naval aircraft sank enemy merchant ship off Pantellaria.
- 29.—Sinking of two supply ships and one tanker in Mediterranean by British submarine announced.
- 30.—U.S. aircraft attacked Kiska—lost three planes. U.S. dive-bombers sank two Japanese supply ships and five barges off Wickham Island.
- 31.—Naval engagement in northern waters announced. Enemy cruiser damaged, torpedo-boat hit. American bombers attacked Kiska.

SPEECH BY THE FIRST LORD OF THE ADMIRALTY INTRODUCING THE NAVY ESTIMATES ON WEDNESDAY, MARCH 3RD, 1943.

SINCE the presentation of the Navy Estimates last year, the Royal Navy and the Dominion Navies have passed through one of the most exacting and dangerous periods in the whole of our great naval history. From the South West Pacific to the Bay of Bengal, the Persian Gulf to the Cape of Good Hope, in the Mediterranean and the North and South Atlantic, and right up to the Arctic Ocean, in the Barents and the White Seas, the conflict with our various enemies has been carried on, in defence of trade and national life, in support of the offensive of our land and air forces in the field overseas, and those of our Russian Ally in her magnificent campaign against the Nazi hordes. There is not sufficient time to do more than refer briefly to the success of Admiral Syfret and General Sturges of the Royal Marines in the capture of North Madagascar and Diego Suarez, which paved the way for the campaign which led to the occupation of that important territory ; to the share of the Navy in carrying reinforcements of men and material to the Desert Army, and cutting the communications and supplies of Rommel's Army ; to the magnificent and repeated relief of gallant Malta, now changed from a beleaguered fortress into an outpost of attack ; to the large number of convoys of supplies taken to Russia in the most difficult and varying conditions and in the face of heavy attacks ; the extraordinary raid of our naval forces on St. Nazaire ; the great naval operation, splendidly planned and carried out, which landed our forces at Dieppe, and subsequently carried out the evacuation ; the change in the situation effected in the Indian Ocean since our Fleet assembled there under Admiral Somerville ; and, above all, the wonderful and unprecedented feat of the planning, the assembly, the escort and the safe delivery through the Straits of Gibraltar of the largest expeditionary armada in history for the invasion of North Africa and subsequently the continuous supply and reinforcement of our Forces there, coupled with constant interference with the enemy's supply lines through the Sicilian Narrows.

When it is remembered that all this has been done in spite of the day-and-night struggle against the greatest threat we have ever experienced to our sea lines by the U-boat attacks, about which I shall speak separately, not only have we reason to be, as the Navy always is, thankful to Providence, but also the nation owes a debt to the officers and men of the Navy, from the principal Staffs and Flag Officers to the ordinary seamen, which can never be fully repaid. Moreover, in case I forget it later, it is just the simple truth to say that these great achievements would have been impossible without the constant loyalty, devotion, courage and selfless endurance of the officers and men of the Merchant Navy, to whom the Royal Navy is the first to pay tribute.

The Prime Minister has already dealt in a recent statement with the shipping situation and the U-boat war, but this is such an important pre-occupation of the Navy at the present time that I am sure the House will pardon me if I refer to the main developments during the past twelve months or so. In the last half of 1941 the U-boat threat seemed to be under control. The shipping losses were less than in the two previous

six-monthly periods and we were killing U-boats faster. The whole position was altered overnight by the entry of Japan into the war. Two great oceans were added at one stroke to the area in which our shipping was menaced by submarine and air attack, and some of the Naval strength on which we had counted for escort work in the Atlantic had to be diverted to more distant theatres. At the same time, the great flow of trade along the coast of Central and North America, mainly carried in American ships, was attacked by U-boats operating from bases on this side of the Atlantic. In the first half of last year the sinkings on the eastern seaboard of America proved a grievous drain on the tonnage available to the United Nations, at times indeed the losses in that period in that area were as much as three-quarters of the total. With the adoption of the convoy system in that area the losses began to fall and declined rapidly until now they represent a small part of the whole. The Royal Navy and Dominion Navies contrived at some sacrifice to protection elsewhere, to offer considerable help to the United States Navy in these waters. Many anti-submarine vessels, including corvettes, were sent. Other corvettes, under construction, were ear-marked at once for the United States Navy; in addition Coastal Command planes with special experience of U-boat hunting were despatched to the threatened area.

When the American coast offered them a diminishing return, the U-boats appear to have pursued two main policies. First, they have concentrated on the mid-Atlantic area where convoys are furthest from friendly air bases. Secondly, with the rest of their forces, their attack was extended as far over the main shipping routes as possible. By the use of supply ships, and supply U-boats of great endurance, their packs seek to replenish themselves at sea, and undertake patrols of long duration. They have made sharp raids, some of them prolonged, on routes as widespread as the south of Freetown, around the Cape of Good Hope, the approaches to the Mozambique Channel and the east coast of Brazil. There have also been incursions into the Gulf of Aden, presumably by the Japanese. I am glad to say that in the Atlantic the Royal Canadian Navy, now grown out of all recognition from its modest pre-war proportions, has come to our aid and four complete Canadian escort groups, and the Canadian corvettes of an American group have for the past year been bringing over some of our ocean convoys, and have achieved some notable successes against the U-boats.

The patrols of the R.A.F. which have been carried out with untiring skill, contribute greatly to the damage inflicted on the U-boat fleet and form an essential part of our anti-U-boat warfare. Aircraft attack is perhaps not yet so lethal as that of surface escorts, but the value of aircraft patrols and escort is shown by the fact that during 1942 more than half of the attacks estimated to have caused damage or destruction to U-boats were made by aircraft. Air escort compels the U-boat either to dive deep and thus lose touch with the convoy or fight on the surface where she is more vulnerable. There is a steady increase in the aircraft allotted to trade protection. The Royal Navy desires to pay a very sincere tribute to the R.A.F. for the increasing help they are rendering in this task.

The need for additional surface escorts in spite of the large numbers already produced, is still pressing, and the production of these craft has the highest priority. In this country, the United States and Canada, great programmes are in hand, and the United Nations will this year receive additions to their escort fleets far greater than in previous years. But

numbers are only part of the answer. Our experience proves the value of a group or team of escort vessels with inspired leadership. The Western Approaches Command now under Admiral Sir Max Horton is working to develop still further this group training. As the Prime Minister has told the House, we must face a bitter struggle with the U-boats. There will be set-backs and periods of serious losses. On the other hand, from December 1 last to February 28 our tonnage losses have been much less than in the corresponding months of last winter. When they first fell in December, we felt we must take the weather as a factor, although that added to our marine risk losses, but now taking three months, and comparing like with like, the result is encouraging, especially when it is remembered we have been competing against considerably larger forces of U-boats, and with the added burden of maintaining the additional Forces in North Africa. I do not suggest that the U-boats will not increase. There is still probably a larger output of U-boats than the total numbers killed, but the gap is being reduced. Already I can say that the results in that direction during the last four months have been the most encouraging of the whole period of the war, and in the month of February just ended from the number and nature of the attacks we know have been carried out, we believe we achieved the best results against U-boats yet experienced.

No praise is too high for the tireless endurance of our escort forces, both ship and air, engaged on this work, and all ranks. I am glad to take this opportunity of saying something which is often forgotten, and that is about the tough job which these men have to do in the Atlantic. Nobody does a greater job than the men in the bowels of the ship, tossed by heavy currents, the engineer and the men under him.

Sir, The Home Fleet under Admiral Sir John Tovey, has the primary function of protecting our shores from invasion, and preventing the enemy Fleet from breaking out on our sea communications. In addition, it has to protect the supplies to Russia both from this country and the U.S.A. The tremendous hardships and hazards of that Northern route have already been stated, but under the leadership of officers like Rear-Admiral Burnett and Captain Sherbrook, V.C., they have been overcome.

These operations have cost the loss of two cruisers, ten destroyers and six smaller warships, with many merchant ships and, above all, the loss of many valuable lives; but the sustenance brought to Russia has paid a great dividend to the United Nations' cause.

Further south, the gallant island of Malta has been sustained and relieved. Since the beginning of 1942, our operations for that purpose, including the reinforcement of the R.A.F. in the Island, cost us the loss of three cruisers, nine destroyers and two aircraft carriers, in addition to merchant ships. In view of the great history of the contribution by Malta the Royal Navy were very glad to render that service. With the help on two occasions of a United States carrier, our aircraft carriers carried altogether 744 fighters for Malta, which had a tremendous effect on the resultant defence.

In the Eastern Mediterranean the Fleet under Admiral Sir Henry Harwood, has had the satisfaction of supporting and supplying the advance of the Eighth Army in its great victory all the way to Tripoli.

At the other end of the Mediterranean, a great fleet, comprising vessels of every class, and almost every nationality among the United Nations, and including the biggest force of aircraft carriers ever assembled by the Royal Navy for a single operation, protected and supported the unprece-

dented expedition which landed in North Africa last November. We are grateful for the services of Admiral of the Fleet Sir Andrew Cunningham and those under him. The course of events at the time has already been described, and I shall not delay the House with it. But with the initial landing the Navy's task had barely begun. In the early stages the successive advances of our forces after landing depended very largely upon ships for their transport, protection, support and maintenance. Sea transport remains vital to them now, and there is the constant menace of U-boats, aircraft and mines to be defeated. Yet already over one million tons of stores have been landed in North Africa in addition to the half million men mentioned by the Prime Minister.

The flank of the route to Egypt has been much strengthened by the occupation of Madagascar. New naval base facilities have had to be provided in those waters and provided urgently and in face of great difficulties. That this has been achieved is a triumph of organisation in the Fleet and of co-operation by shore authorities. We are grateful to the Governments of the Union of South Africa and of India for the ready help which they have given and for the contribution which the Royal Indian Navy and the South African naval forces have made to the conduct of the war at sea. Surely there is no finer story than that of the little Royal Indian mine-sweeper and the Dutch tanker under its escort who together took on and signally defeated two large Japanese raiders last November. The anti-submarine vessels of the Royal Indian Navy are imbued with the same spirit and have carried out a considerable number of anti-submarine attacks.

I should like to tell the House that a few months ago the Union Government decided to amalgamate the South African seaward defence force and the South African section of the R.N.V.R. under the title of "South African Naval Forces." I am sure the House would join with me in welcoming this new Service and in offering our best wishes for its future development.

In the Pacific the Royal Australian and Royal New Zealand Navies have co-operated, together with Dutch and Free French warships, in assisting the American Pacific Fleet to fight the Japanese.

May I add throughout all these areas there is a task in which all the British and Allied Navies have a proud record indeed. Enemy mines of every type and ingenious combination have to be met. They are found in the coastal waters of this country, throughout the Mediterranean, in the Cape area, in India and Australia. They have been met with ingenuity and unflagging devotion in the face of great danger and loss. It will not be possible to describe in detail the achievements of our far-flung mine-sweeping forces until the end of the war, but when that time comes the debt we owe to them will be seen to be immeasurable. I would only add to what I have said on previous occasions that the number of enemy mines actually destroyed in swept channels, if each one had been lethal against a ship, would have been enough at least to sink the whole British mercantile marine twice over.

And let us not forget that minelaying is a game that two can play—and do play. It is a highly specialised and dangerous game, and by its very nature is one of our most secret activities. The House will forgive me, therefore, if I merely say that in this we have been neither idle nor unsuccessful.

By making possible the North African operations the Navy have taken a great step towards the completion of the blockade of the enemy in

Europe. For quantity alone, this was by far the most important of the remaining leaks in the blockade. Up to last November, exports from French and North and West Africa to French Metropolitan ports were running at the rate of nearly four million tons a year, including large quantities of vegetable oils and minerals. Possibly some of these imports may have remained in France, but the greater part was undoubtedly transferred direct to Axis home territory. The loss of the vegetable oils will be particularly serious for Axis economy.

A limited traffic remains in ships of long endurance, direct between the Biscayan ports and Japan. Being restricted to key commodities, this traffic is no doubt of considerable importance both to Germany and Japan, but in quantity it is a mere trickle, and this, coupled with the extensive enemy coastline, makes interception difficult. We have successfully interfered with this traffic in recent months, during which six of the blockade runners have been sunk and others damaged. Perhaps I may draw the attention of the House to that remarkable story this morning of co-operation between the American aircraft under Coastal Command and H.M. cruiser *Sussex* which disposed of one of these ships.

The attack by every possible means on the rest of the enemy's sea communications, which are of course confined to waters close to enemy shores where protection is easy, has continued with undiminished vigour and by every possible means. According to our latest estimates, and they are constantly revised to make sure they are on the conservative side, the tonnage of which the Germans and Italians have been deprived has now reached the total of some five million tons, and nearly another three million tons have been damaged, much of it severely. This excludes losses inflicted by our Russian Allies and takes no account of Japanese losses either.

In this war the enemy has had to supply some of his armed forces by sea, especially in North Africa. This has given our submarines an opportunity to inflict heavy losses.

How powerful this weapon is in the hands of our young men requires no emphasis. Almost daily the communiqués tell of the destruction of enemy men-or-war, U-boats and shipping, wrought by the immaculate courage and high endeavour of our submarine crews. Less in number compared with the enemy, faced with the grim necessity of searching out their targets on the enemy's coastline and in his very harbours, they ceaselessly carry out their exacting task with wonderful success.

In addition they carry on for us the training of our own anti-submarine escorts and destroyers, and, when dire need arose, they supplied the beleaguered fortress of Malta as transports.

All this is not done without bitter losses, and the gaps are more than filled. The increasingly large part played by the gallant officers and men of the Reserve, both R.N.R. and R.N.V.R., and ratings entered for hostilities only, help to insure that our submarines go from strength to strength. I would add that the standard of design and construction of our submarines is proved to be second to none. The standard of training of the submarine officers and men is maintained at a very high level.

In the submarine service such officers as Commander Wanklyn, V.C., and Commander Miers, V.C., are household names. I feel, that where all have done so well, it would be invidious to make special mention of any. But the House might like me to put on record the names of a few commanding officers of submarines who have operated in the North African campaign

and who, between them, have sunk a very large number indeed of enemy supply ships and their escorts. Here are the names :

Commander B. Bryant.	Lieutenant S. L. C. Maydon.
Commander J. W. Linton.	Lieutenant A. C. G. Mars.
Lieutenant H. S. Mackenzie.	Lieutenant J. S. Stevens.
Lieutenant L. W. A. Bennington.	Lieutenant E. T. Stanley.
Lieutenant P. R. H. Harrison.	Lieutenant I. L. M. McGeoch.

A great deal has been said and written lately about another great branch of our service, the Fleet Air Arm, and it has been inferred that the Admiralty is not sufficiently air-minded. I do not think such a statement is justified. On the contrary, our Fleet Air Arm have shown the way to the rest of the world, and achieved very great results. The Admiralty only took over complete control in April, 1939, and expansion has therefore taken place under difficult conditions. There has naturally in the circumstances been a shortage of senior officers. Nevertheless the Fleet Air Arm have pioneered in every new development in air operations over the sea. They were the first Air Service to sink a warship by dive bombing as they did at Bergen in 1940 ; the first to sink a battleship as they did at Taranto ; and the first to defeat air attack on a fleet by fighter defence.

I have already mentioned the Navy's part in the maintenance of Malta. It is true to say that but for the delivery of fighters by aircraft carriers, Malta would early on have been deprived of fighter defences, without which it could not have held out. Apart from this, the Fleet Air Arm have provided cover for every important Malta convoy during the past year and have also played their part in the protection of supplies to Russia. Altogether during 1942 they accounted for over one hundred enemy aircraft, and damaged half as many again, whilst our ratio of losses in actual air combat was only about one-fourth of those of the enemy.

The Fleet Air Arm also had a great share in the successful landing in North Africa. It was their action which enabled the assault forces to land without encountering any air opposition, and they secured the immediate occupation of the Algerian airfields by the shore based forces, including the advanced units of the R.A.F. and Allied Air Forces. One of the airfields in North Africa was handed over intact to a naval fighter pilot who went straight down, and with a few planes covering him overhead, took charge of it. Naval aircraft were also concerned with a number of other duties, including attacks on fortifications, anti-submarine protection and close co-operation with the assault forces.

Nor have the Fleet Air Arm been confined to operations from carriers. Throughout the year torpedo bombers have operated in the Mediterranean from shore bases with great success and they have reached an extremely high level of skill. They have sunk, during 1942, ten enemy supply ships as well as damaging, in most cases severely, at least four warships and twenty-three merchant ships, including transports and tankers. Other units operating in the Western Desert have played an invaluable part, in co-operation with the R.A.F., in the bombing of enemy defence positions and motor transport. Indeed, so highly are they valued in that service by the R.A.F. that when the Admiralty suggested that both crews and aircraft should return to their proper sphere, the sea, both the Air Officer Commanding-in-Chief and the Military Commander-in-Chief in Egypt begged that they should be allowed to remain.

In addition, a number of small naval air units are co-operating with

the R.A.F., from stations in the United Kingdom, in various missions for which their naval experience and technique make them particularly fitted. It will be remembered also that naval fighters, temporarily disembarked to reinforce the defence of Ceylon, had a successful share in the repulse of the Japanese Fleet Air Arm in April last.

Last, but not least, comes the anti-submarine work of the Fleet Air Arm. The aircraft carriers of the Fleet Air Arm have proved most valuable for convoy protection against U-boats in both the North African and Russian convoy operations. The aircraft they employ for that purpose are well suited for the operations and, in an emergency, being with the convoy, they can be expected to put more aircraft quickly into the air around the convoy than is possible with shore-based aircraft. Moreover, once they have expended their armament they can be much more speedily re-armed and back on patrol than can shore-based aircraft. Naval aircraft have had a share in the destruction or damage of a considerable number of U-boats.

The efficiency of the air crews of the Fleet Air Arm has been impressive, and I would take this opportunity of expressing our admiration, which I am sure the House will share, of their very gallant and skilled work.

The Fleet Air Arm has been constantly expanding in spite of losses sustained to our carriers, and this expansion is rapidly increasing. To match this expansion, all the departments specially concerned with air matters at the Admiralty have been reorganised. In carrying out this reorganisation the Admiralty has had three principles in mind: first, that the Fleet Air Arm should be regarded as an integral part of the naval forces and not as a separate Service; secondly, that the Staff and Material sides should be kept separate as in general naval administration; and thirdly, that on the Staff side there should be one officer, A.C.N.S.(A.), to co-ordinate all the necessary arrangements. I would add that the work of the Fifth Sea Lord includes the responsibility of superintending naval air equipment.

I hope that the statement I recently made to the House on the supply of naval aircraft will have removed some of the misconceptions which existed and the uneasiness to which they had given rise. There is no doubt that in the Seafire, now coming forward in increasing numbers, the Fleet Air Arm possess the best naval fighter in existence anywhere in the world at the present time. I have seen objections raised to this aircraft on the ground that it is only a modification of the Spitfire, but the Japanese Navy are not blamed because they have adapted for naval use the best standard Japanese land fighter available. It must, of course, be remembered that to make aircraft suitable, or even safe, for operation from carriers, they must have certain fittings not found in shore-based aircraft, and which must have some slight effect, though only slight, on their performance.

As to our new torpedo bomber, the Barracuda, I would say that it is easy to criticise delays which have occurred and to blame this authority or that for lack of foresight or some other desirable quality. It is necessary, however, to remember the air production position when we were forced into the war, and to reflect upon the even more perilous situation with which we were suddenly confronted a year later when France fell. The Barracuda was already well advanced in design when war broke out, but its design was based upon an engine which had to be discontinued in the vital interests of general aircraft production. Then again in the autumn of 1940 the Government were faced with the question to proceed with the

development of the redesigned Barracuda or to have more fighters for the defence of Britain. The decision was to suspend the work on the Barracuda for a short while. This was no doubt a regrettable decision to have to take, but, given the situation, can there be any doubt that it was justified in the general national interest. However, the stage of such heart-breaking decisions is now past, and the Barracudas are coming from the factories in increasing numbers. I would add, though I must not be specific, that other new types of naval aircraft of British design are being developed.

When one considers the tasks undertaken by the Royal Navy all over the world, and very frequently in narrow seas, it is not surprising that the losses have been heavy, but taken all round, the Fleet finds itself a great deal stronger to-day than it was a year ago. Although we have lost one new and four old capital ships, one new and four old aircraft carriers and two merchantmen converted to aircraft carriers, we are as strong now in capital ships as we were at the outbreak of war, and the weight of air forces that can be launched from shipboard has increased in the same period. In the cruiser category, replacements have very nearly equalled losses, and it must be remembered that for some functions the aircraft carrier is replacing the cruiser. Despite the heavy losses we have sustained in the destroyer and submarine categories we now have a good many more in both classes than we had when the war started. The new ships that have replaced the old are, of course, individually stronger and better adapted to meet the new weapons they have to face.

The number of warships, from trawlers, fleet minesweepers and corvettes up to the largest types completed since the outbreak of the war in British shipyards here and overseas now reaches a total of over 900. In addition to new naval construction a great number of merchant ships have been converted to auxiliary warships; in many cases the work has been both intricate and extensive.

This great achievement compares very favourably with that of the last war. The shipyards of the Empire, that is those in Australia and Canada as well as those at home, are justifiably proud of their output, which is deserving of high praise, which should be given to the workers as well as to the employers. But to be appreciated at its true worth this achievement must also be considered in the light of the tremendous change which has occurred in the quality and equipment of warships and in the circumstances in which they have to operate.

The improvement of anti-submarine weapons, which I cannot of course describe, has been tremendous, and the scale and complexity of this equipment in the Fleet to-day would astound those who knew it only in the last war. The same is true of all the various fire control and detection devices with which ships have to be even more lavishly equipped. Another instance of the same process is anti-aircraft armament, both long and short-range. To give one example of this constant improvement in equipment generally, a modern destroyer has as much electrical work in it as a cruiser of 1914-18. Where electrical wiring was measured in miles, to-day it is measured in hundreds of miles.

While the work involved in the construction of every individual ship has thus increased, this war has imposed on the shipyards much heavier burdens in other directions than did the last war. This is not only due to the greater strain upon the Navy, the necessity of using routes where weather conditions are more severe; and the large and hazardous opera-

tions we have had to undertake—it is also due to the design requirements of the greatly improved ships we are building and to better damage control and salvage arrangements which have to be provided. Many ships are saved for the repair yards to-day which in earlier days would have been a dead loss to us. If you take each occasion when a warship enters into dockyard hands for the purpose of repair or refit as one unit, the shipyards of this country have turned out, since the war begun, no less than some 34,000 warship repair units. Of these, mainly the smaller vessels, over 80 per cent. have been turned out by the private repair firms.

We have, moreover, built up large fleets of special landing craft, mosquito craft and coastal minesweepers. The motor torpedo boats and gunboats and similar vessels of the motor launch type, produced not only here but all over the Empire and in the U.S.A., also run into several hundreds; while the coastal minesweeping force, some of it composed of requisitioned vessels, has long since passed the thousand mark. We have also had to build a number of harbour servicing craft to replace some of those taken up from their civilian employments and now becoming worn out. While dealing with these mosquito craft, I would ask the House to join with me in paying a great tribute to the work of the Coastal Forces. It is an amazing thing and a wonderful tribute to our native seamanlike qualities to remember that in that vast force more than 90 per cent. of the officers who have fought so gallantly are R.N.V.R. officers. I feel that they deserve recognition.

Perhaps the most outstanding achievement is the creation of the corvette fleet which, in spite of losses, now numbers well over 200. The Admiralty foresaw the need for a type of ocean-going anti-submarine escort of simple design and capable of rapid production, and the first corvettes were ordered some time before the war broke out. By the middle of 1940 a small number were in service, and since then their numbers and their quality have increased by leaps and bounds. The special new, faster and heavier type of corvette, with heavier armament, some of which are already in use, is being given a new name, to distinguish it from the previous corvette, and I hope the House will approve it. We propose to call it the frigate. We are making a special drive to improve the rate of construction still further, which includes the adoption on a considerable scale of the methods of pre-fabrication by structural engineering firms which have proved so successful in the rapid output of the larger types of landing craft. In the building up of our corvette fleet, we have had magnificent assistance from Canada, which has become, since the outbreak of the war, a major shipbuilding country. Canadian yards have so far turned out scores of corvettes, as well as fleet minesweepers.

When we come to merchant tonnage, the output in this country for the first forty-two months of this war is considerably greater than that of the corresponding period of the last war, although, as now, the submarine menace during the later years of the last war called for the maximum effort from the shipyards. In spite of the urgent requirements of the Navy, especially in small ships, and the enormous volume of repair work and conversions, the target for 1942 was exceeded by a creditable margin.

Our construction programmes have now, of course, to be considered in relation to those of the United States and the other United Nations. The immense programmes, which are still expanding, in North America must represent the main source of replenishment and reinforcement to meet our united merchant ship requirements. The total output from Empire and

American sources since the outbreak of war is approaching double the total output from the whole of the non-enemy world in the corresponding period of the last war. In making our plans to ensure the best use of our capacity the size of the American programmes must be taken into account, and we have decided that it will be profitable, since a ship saved is better than one replaced, to concentrate in this country more upon increasing the output of escort ships even if this interferes to some small extent with our merchant building.

The merchant side of the industry has had, like the warship side, to bear a great burden in addition to its task of new construction.

The amount of repair work arising in this war has been much larger than anything known in the last war. The historian Fayle records, with obvious horror, that there were times in the last war when the merchant tonnage under repair in this country amounted to one and a half million tons. In the spring of 1941 the corresponding figure, at the peak, was 2,600,000 tons. As a result, partly of strategic changes, but in great measure also of the special measures taken to deal with it, this figure has been very greatly reduced and a considerable volume of the reduced figure is repaired whilst the ships are working cargo.

Besides all this work of repair and construction, the merchant industry is still called upon to perform, often at short notice, a tremendous volume of conversion work. With the opening of new theatres of war, ships have to be converted for the carriage of troops and heavy equipment. As we passed to the offensive, other ships had to be converted for the multifarious purposes needed for Combined Operations in which the Navy has to play a very great part. The number of conversion jobs so far completed runs into several thousands. The scale of preparations for an operation like the landing in North Africa, and all requiring to be done in a short time under the cover of the utmost secrecy, is difficult for the layman to grasp. It involved alterations to over 300 ordinary merchant vessels for use as troop carriers, cased petrol carriers, floating workshops and store issuing ships.

When one considers all the dislocation which such expeditions entail it is no mean achievement to have maintained the flow of new construction and repairs. Yet this has been done, and no doubt will continue to be done. The defensive equipment of merchant ships has greatly increased. Up to date 8,300 British and Allied merchant ships have been fitted with guns and other devices to protect them against aircraft or submarines, or both. Most of them also have special accommodation for the guns' crews, special armour protection for the bridge and special communication systems to facilitate rapid action in an emergency. A joint force of specially trained naval ratings and soldiers of the Maritime Regiment of the Royal Artillery has been built up to man these guns and now numbers nearly 33,000 men, that is to say approximately one-third of the strength of the pre-war Royal Navy. In particular, the production of that invaluable close range anti-aircraft gun, the Oerlikon, has reached such dimensions that great quantities are available for the arming of merchant ships, and during this past twelve months over 8,000 guns of this kind were supplied and fitted to British and Allied merchant vessels. Apart from all these, and many other devices provided for the self-preservation of merchant ships, a high proportion of our ships have to be equipped with new heavy lifting apparatus to enable them to carry the tanks, the aircraft, the barges and the landing craft which are being shipped in great quanti-

ties all over the world. These are problems of a magnitude and variety not comparable to those of the last war.

The great output that has been achieved is evidence of the foresight with which the Governments of the United Nations have approached the problem. A great deal of the credit belongs, and we say it with all gratitude, to the Government of the United States. Still, His Majesty's Government are also entitled to a share and so are the Governments of the Dominions who have devoted their resources and their energies to this task. Canada, with a certain amount of technical assistance from this country, has become not merely a great source of the smaller kinds of warships but also of the standard tramp merchant ship. In 1942, Canadian merchant ship production exceeded 40 per cent. of our own—an extraordinary achievement for a country which had never before built ocean-going ships. The Governments of Australia and India have also inaugurated schemes for the production of merchant tonnage in which we have given help, and it is hoped that the first Australian ship will be completed this month. Australia would already have been producing merchant ships but for the overriding demands of repair work. The other Dominions and several of the Colonies are developing their shipbuilding resources for the benefit of the war and are producing substantial numbers of coastal vessels.

At home, the development of the shipyards has continued at an accelerated pace and a large programme of re-equipment is well under way. The total cost of schemes already in hand or authorised is in the neighbourhood of £4,500,000, which is being devoted principally to the installation of welding equipment, new and heavier cranes, machine tools and improvements in layout. Already a great deal of welding equipment has been supplied to the industry, including a number of automatic welding sets of American design. Since the end of 1941 the number of welders and trainee welders has increased by 33 per cent. The number of women employed in the industry is increasing, but even allowing for the unsuitability of much of the work for female labour, the proportion ought to be higher than it is. There has, however, been a steep rise over the last three months of last year, amounting to an increase of 37 per cent. in the number of women employed. We are constantly working to secure continued improvement in this respect. The labour force as a whole has increased by several thousands, including a further 2,000 ex-shipyard skilled men who have been directed to the industry. Unfortunately, however, wastage in the shipyards is high for age reasons ; and it is clear that very few skilled men can now be extracted from other essential war industries without serious detriment to other production. The plans in force this year include not only the addition of substantial numbers of trainees, but also the transfer of certain capacity from other industries to shipbuilding and marine engineering. Payment by results is being extended and should improve output. On the other hand, we must now face the fact that some skilled men must be withdrawn from the industry to provide the technicians required for the manning of newly constructed ships and also to build up the corps which is already in being for the manning of repair and maintenance bases abroad. Men called up into this corps will be performing a vital duty, since it is obviously more economical in ship-miles and time in a far-flung war such as this to repair as many units as possible on their foreign stations.

A good deal has been said recently about the speed of merchant ships,

but in view of the considered statement to the House by the Prime Minister only three weeks ago, and by the Minister of War Transport yesterday, I do not propose to refer to the question, but if it should be raised in the debate an answer will, of course, be given.

There is one other means, about which little has been said, which has helped to preserve our tonnage position. From the early days of the war, the Admiralty, with the co-operation of the firms normally engaged in this work, have built up a large salvage organisation which functions not only in our Home Waters but also in Iceland, in the Mediterranean and elsewhere. Allied to this service is the rescue tug service, which is constantly being expanded and which has brought in many a damaged ship which would otherwise have been lost in the oceans. Altogether several millions of tons have been saved. In the African harbours which have recently come into our occupation, our salvage officers will no doubt add much to their record, with the satisfaction of knowing that much of the tonnage, when raised, will represent a direct transfer from enemy flag to British.

By their exertions the naval forces of the British Commonwealth of Nations and Allied contingents brought us successfully through the desperate period of our isolation. Since then there have been grievous setbacks and serious threats; but there can, I think, be no doubt that during the past twelve to fifteen months the main tendency of the situation has been towards improvement. After a period of uninterrupted Japanese successes, the United States Navy, in a series of victories from Midway to the Solomons, have effectively checked Japanese progress and have made possible the ejection of the Japanese from some of their outermost conquests. In the Mediterranean, by brilliant feats of arms in which all services have distinguished themselves, we have already obtained more freedom of movement at sea, and this process will, I trust, continue.

Nevertheless, remembering the U-boat campaign and the War in narrow seas, it must be accepted that the risks and hazards will increase. This is the price that must be paid if we are to go on carrying the War to the enemy across the seas, as we must do and intend to do. Every new expedition and every fresh territory liberated from the enemy's grasp involves increased commitments in troopships, supply ships and escorts, and it is in this light that we are bound to view the future programme of imports to this country. I am sure that for this purpose our people will show every understanding, and will be ready to accept any restrictions that may be necessary for the sake of offensive action. On the other hand, the general production of merchant tonnage by the United Nations is showing an increasing margin over our losses, and it will be our constant endeavour to enlarge that margin by destroying more and more U-boats with our rapidly increasing resources.

The same view must be taken in considering the relation of naval strategy to our strategy as a whole. A great many of the tasks which fall upon our naval forces are defensive in character. If the war is to be finished in the shortest possible time one of the pre-occupations of His Majesty's Government and their advisers must be to meet these defensive requirements with the minimum of resources consistent with safety, while making the remainder available for that offensive action which alone can bring about the unconditional surrender of the enemy, as laid down at the Casablanca conference. To this purpose, the Navy, with the other Forces, will devote itself. It is not ashamed of its record from top to bottom, and puts its position with confidence to the House.

BRITISH AND FOREIGN NAVIES.

PRINCIPAL OFFICIALS

On January 1, 1943.

GREAT BRITAIN.

*Board of Admiralty.**First Lord.*—The Right Honourable A. V. Alexander, C.H., M.P.*First Sea Lord and Chief of Naval Staff.*—Admiral of the Fleet Sir A. Dudley P. R. Pound, G.C.B., G.C.V.O.
(First and Principal Naval Aide-de-Camp to the King).*Deputy First Sea Lord.*—Admiral Sir Charles E. Kennedy-Purvis, K.C.B.*Second Sea Lord and Chief of Naval Personnel.*—Vice-Admiral Sir William J. Whitworth, K.C.B., D.S.O.*Third Sea Lord and Controller.*—Vice-Admiral W. F. Wake-Walker, C.B., C.B.E.*Fourth Sea Lord and Chief of Supplies and Transport.*—Vice-Admiral Sir John H. D. Cunningham, K.C.B., M.V.O.*Vice-Chief of Naval Staff.*—Vice-Admiral Sir Henry B. Moore, K.C.B., C.V.O., D.S.O.*Assistant Chiefs of Naval Staff.*—Rear-Admiral R. R. McGrigor.

Rear-Admiral J. H. Edleston, C.B.E.

Financial Secretary.—The Right Honourable G. H. Hall, M.P.*Parliamentary Secretary.*—Lord Bruntisfield, M.C.*Civil Lord.*—Captain R. A. Pilkington, M.C., M.P.*Controller of Merchant Shipbuilding and Repairs.*—Sir James Lithgow, Bart., M.C., T.D.*Permanent Secretary.*—Sir Henry V. Markham, K.C.B., M.C.

FOREIGN POWERS.

Country.	Minister of Marine.	Chief of Staff.
Argentina . . .	Rear-Admiral Mario Fincati	Vice-Admiral Jose Guissola
Brazil . . .	Vice-Admiral Henrique Aristides Guilhem	Vice-Admiral Vieira de Mello
Chile . . .	Don Emilio Bello Codecido (Minister of National Defence), Vice-Admiral Julio Allard (Director General of the Navy)	Vice-Admiral Juan Gerken.
China . . .	Admiral Chen Shao-Kwan (Minister of Naval Affairs)	Vice-Admiral Chen Shun-Ying
Colombia . . .	—	—
Cuba . . .	—	—
Denmark . . .	Vice-Admiral H. Rechnitzer (Chief of Naval Defence and Director of the Naval Ministry)	Commodore C. Hammerich
Ecuador . . .	Colonel Benigno Andrade Flores (Minister of Defence)	General Enrique Bariga (Commanding Naval Forces)
Finland . . .	J. Nuukkanen (Minister of Defence)	Rear-Admiral Lundmann
France . . .	Vice-Admiral J. M. G. Abrial	—
Germany . . .	Adolf Hitler (Supreme Commander of the Armed Forces)	General-Admiral Dr. Raeder (Commander-in-Chief of the Navy)
Greece . . .	Rear-Admiral E. Cawadias	Vice-Admiral A. Sakellariou (C.-in-C. Fleet. No Chief of Staff)
Hungary . . .	Rear-Admiral O. R. Wulff (Inspector General)	—
Italy . . .	Benito Mussolini	Ammiraglio Arturo Riocardi.
Japan . . .	Admiral Shimada	Admiral Nagano
Mexico . . .	General Quiroga (Minister of War and Marine)	Rear-Admiral O. P. Blanco
Netherlands . .	Vice-Admiral J. T. Furstner (Minister of Naval Affairs)	Rear-Admiral J. W. Termijtelen
Norway . . .	Oscar Torp (Minister of Defence)	Rear-Admiral E. Corneliussen (C.-in-C.)
Paraguay . . .	Commander D. Manuel Aponte (Director of Marine Dept.)	Lieut.-Commander Ramon Martino (Director General of the Navy)
Peru . . .	Rear-Admiral Fedirgo Diaz Dulanto	—
Poland . . .	Vice-Admiral J. Swirski (Chief of Polish Navy)	Capr. T. P. Morganstern
Portugal . . .	Captain Manuel Ortins De Bettencourt	Rear-Admiral Alvaro Botelho de Sousa
Rumania . . .	—	Admiral I. Georgescu.
Soviet Union . .	Admiral Kuznetsov (People's Commissar)	Admiral Isakov
Spain . . .	Vice-Admiral S. Moreno Fernandez	Vice-Admiral A. Arriaga Adam, Rear-Admiral Ozamiz Lastra (C.-in-C. Naval Forces afloat, Flag in Canarias)
Sweden . . .	T. E. Skold (Secretary of State for Swedish Defence Forces)	Admiral C. F. Tamm
Thailand . . .	Luang Bipul (Minister of Defence)	Rear-Admiral Luang Sindhu
Turkey . . .	Rear-Admiral H. Gokdalay (Under-Secretary of the Minister of National Defence)	Rear-Admiral C. Ulman (Deputy Chief)
United States . .	Colonel Knox (Secretary of the Navy)	Admiral E. J. King, C.-in-C. (Chief of Naval Operations)
Uruguay . . .	General Juno Cesar Rolotti (Minister of War and Marine)	Captain Gustavo Schroeder (Inspector General of Marine)
Venezuela . . .	Commander Lavazaval (Head of the Navy)	—
Yugoslavia . . .	S. Jovanovitch (Prime Minister)	Captain Ivan Kern.

BRITISH AND FOREIGN NAVAL ATTACHÉS

On January 1, 1943.

BRITISH NAVAL ATTACHÉS ACCREDITED TO FOREIGN COUNTRIES.

To	Name.	Appointed.	Headquarters.
Argentine	Captain H. A. Lorster, M.V.O., R.N.	June, 1942	Buenos Aires
	Assistant, Pay-Commander L. Hirst, R.N.	April, 1940	„
Uruguay	Commander H. D. Johnston, D.S.C., R.N.	July, 1942	Montevideo
Brazil	Captain R. A. Wilson, D.S.O., R.N.	Jan., 1941	Rio de Janeiro
	Assistant, Commander C. H. Pullen, R.N.V.R.		
Venezuela, Colombia .	Captain H. Boyes, C.M.G., C.I.E., R.N.	Dec., 1942	Caracas
Chile, Peru, Ecuador .	Captain A. C. W. Domville, R.N.	May, 1940	Santiago
	Assistant, Commander F. V. Vaughan, R.N.V.R.	Aug., 1939	„
Portugal	Captain H. D. Owen, R.N.	Oct., 1938	Lisbon
	Assistant, Commander E. W. Billyard-Leake, D.S.O., R.N.	May, 1942	„
	Assistant, Lieutenant J. A. C. Hugill, R.N.V.R.	May, 1942	„
	Captain A. H. Hillgarth, C.M.G., O.B.E., R.N.	Sept., 1939	Madrid
Spain	Assistant, Lieutenant-Commander S. A. Gomez-Bears, R.N.V.R.	Nov., 1940	„
	Assistant, Lieutenant S. Arlington, R.N.V.R.	May, 1942	„
	Captain H. M. Denham, R.N.	May, 1940	Stockholm
Sweden	Assistant, Lieutenant H. D. G. Harris, R.N.V.R.	Nov., 1941	„
	Rear-Admiral W. L. Jackson, D.S.O.	Jan., 1942	Ankara
	Assistant, Commander O. E. Nicolls, R.N.	Dec., 1939	Istanbul
	Assistant, Commander V. Wolfson, R.N.V.R.	April, 1940	„
	Assistant, Lieutenant-Commander F. H. G. Oliphant, R.N.	Aug., 1941	Ankara
U.S.A., Mexico, Cuba, and Central America States	Rear-Admiral H. Pott, M.V.O.	June, 1940	Washington
	Assistant, Captain (E.) W. S. Jameson, R.N.	Jan., 1941	„
	Assistant, Lieutenant P. Otway Smithers, R.N.V.R.	Nov., 1940	„
	Assistant (Air) Lieutenant-Commander R. M. Smeeton, R.N. (U.S.A. only)	Nov., 1940	„

FOREIGN NAVAL ATTACHÉS ACCREDITED TO GREAT BRITAIN.

Argentine : Post vacant.

Belgium : Lieutenant-Colonel of the Military Aviation, L. F. E. Wouters, C.B.E., M.C.

Brazil : Post vacant.

Chile : Captain Senor Don Alejandro Gallegas.

China : Commander Chow Ying-tsung.

Denmark : Post vacant.

France : Rear-Admiral Auboyneau (National Commissioner for the Free French Navy).

Greece : Captain C. Alexandris, R.H.N.

Mexico : Senor Teniente de Fragata Alfredo Marquez Ricano.

Netherlands : Commander A. de Booy, R.N.N., O.B.E.

Norway : Captain J. E. Jacobsen, R.Nor.N., O.B.E.

Peru : Post vacant.

Poland : Commander Tadeusz Stoklasa, Polish Navy, O.B.E.

Portugal : Post vacant.

Soviet Union : Rear-Admiral N. Kharlamov.

Spain : Post Vacant.

Sweden : Captain Count J. G. Orenstierna, R.S.N.

Turkey : Commander Siret Cakir.

U.S.A. : Rear-Admiral Alan G. Kirk, U.S.N.

Uruguay : Post vacant.

Yugoslavia : General de Division Milorad M. Radovitch.

PICTORIAL SECTION

SILHOUETTES OF WARSHIPS

CAPITAL SHIPS.

[In order to facilitate identification, the ships are arranged in accordance with the number of funnels and masts, as these are the features most easily distinguished at a distance. Dimensions and particulars of British and foreign warships will be found on pp. 149-248. All the profiles are drawn to the scale $\frac{1}{2}$ in. = 100 ft.]

[An Index to the names of vessels of which profiles are included in this section are given at the end of the volume.]



SWEDEN. Battleship. Oscar II.
(A searchlight is fitted on each mast.)



UNITED STATES. Battleships. Washington, North Carolina.



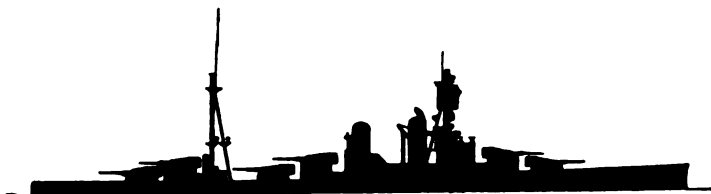
GREAT BRITAIN. Battle-cruiser. Renown.
Forward superstructure modified.
Fore topmast and topgallant mast fitted.
The after funnel is the same size as forward funnel.
Tripod mainmast replaced by polemast, and main topgallant mast removed.



GREAT BRITAIN. Battleships. King George V., Duke of York, Howe, Anson.



JAPAN. Battleships. Mutsu, Nagato.
Single funnel fitted and catapult added between mainmast and "X" turret.
Superstructure built round mainmast.
Bridgework modified.
Main topgallant mast removed.



JAPAN. Battleships. Ise, Hyuga.
 Fore funnel and topmast removed.
 Bridgework modified.
 Superstructure built round mainmast.
 Main topgallant mast removed.



JAPAN. Battleships. Kirishima, Kongo.
 Kongo has funnels of equal height.
 Derricks fitted between X and Y turrets.



CHILE. Battleship. Almirante Latorre.
 (Modernised 1931—mainmast raised and bridge work altered.)
 Catapult fitted on quarter deck.



UNITED STATES. Battleships. California, Colorado, Maryland, Tennessee, West Virginia.
 (Now fitted with 2 catapults, one on "X" turret and one on the quarter deck.
 Crane fitted at stern.
 Maryland has range-finder fitted on B turret.



ITALY. Battleships. Conte di Cavour, Giulio Cesare, Andrea Doria, Carlo Duilio.
 Tripod mainmast removed in Doria.



ARGENTINA. Battleships. Moreno, Rivadavia.

Guns on B and X turrets replaced by range-finders.



FRANCE. Battleships. Lorraine, Provence.

NOTE.—Lorraine has been modernised. The midships turret has been removed and replaced by a hangar and catapult. Cranes fitted abreast after funnel. Bridgework extended. Fore topmasts removed, main topmasts fitted.



FRANCE. Battleships. Courbet, Paris (operated by the Free French).

Cranes fitted abreast after funnel.

After funnel reduced in height.

Range-finder fitted on B turret.



BRAZIL. Battleships. Minas Geraes, São Paulo.

Forward funnel removed and bridgework modified.

Remaining funnel made larger.

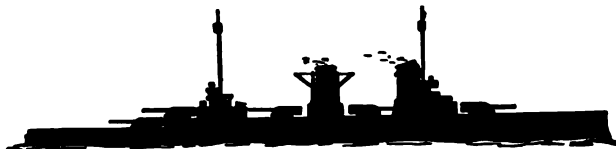
Polemast and range-finder fitted abaft funnel.



SOVIET UNION. Battleships. Marat, Paris Commune and October Revolution.

Two derricks fitted between mainmast and turret in Marat and Paris Commune.

Crane fitted abreast mainmast in October Revolution.



TURKEY. Battle-cruiser. Yavuz Sultan Selim.



GREAT BRITAIN. Battleships. Nelson, Rodney

Nelson has a crane amidships.
Rodney has a catapult fitted on C turret.
Mast structure increased.



GERMANY. Battleship. Tirpitz.



FRANCE. Battleships. Dunkerque, Strasbourg.

Catapult fitted on quarter deck. Crane is moved aft to break of deck.
Main topgallant mast fitted.



JAPAN. Battleships. Fuso and Yamashiro.

(After reconstruction, 1924.)
A.A. guns fitted abreast mainmast.



GREAT BRITAIN. Battleship. Malaya.

NOTE.—Catapult fitted before mainmast; Derrick on mainmast removed
Hangar and cranes fitted abreast funnel.



GREAT BRITAIN. Battleships. Warspite, Queen Elizabeth, Valiant.
Sternwalks fitted in Warspite and Queen Elizabeth.



UNITED STATES. Battleships. New York, Texas.

Fore topmast removed; Mastheads modified and fitted with machine-guns.
Range-finder fitted on B and X turrets.



GREAT BRITAIN. Battleships. Ramillies, Resolution, Revenge, Royal Sovereign.

NOTE.—Resolution has a smoke deflector on the funnel. Ramillies and Resolution
have tripod mainmasts, a catapult on "X" turret and a crane abreast
mainmast.

Main topgallant mast fitted. Fore topmast removed.



UNITED STATES. Battleships. Idaho, Mississippi, New Mexico.
(After modernisation, 1934.)



UNITED STATES. Battleship. Pennsylvania.

Catapult on "X" turret added. Crane fitted at stern. Main topmast is on fore side of mast structure.



UNITED STATES. Battleships. Nevada, Oklahoma.

Bridgework extended and mastheads modified.



UNITED STATES. Battleship. Arkansas.



GERMANY. Armoured Ship. Admiral Scheer.



GERMANY. Armoured Ship. Lutzow (ex-Deutschland).

Polemast fitted on aft side of funnel. Catapult fitted abaft funnel.
Fore topmast fitted.
Polemast fitted on after superstructure.
Cranes fitted in lieu of derricks.



GERMANY. Battle-cruisers. Scharnhorst, Gneisenau.

Gneisenau has a vertical stempiece.

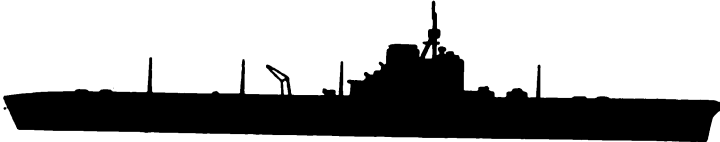
AIRCRAFT AND SEAPLANE CARRIERS AND TENDERS.



GREAT BRITAIN. Aircraft Carrier. Argus. (Training Ship.)
Flight deck levelled forward and extended aft.



GREAT BRITAIN. Aircraft Carrier. Furious.
Three wireless masts added each side of flight deck.
Quarter deck has been raised one deck.
Deck forward has been levelled and sides blanked off.
Superstructure, polemast and spotting top fitted amidships.



GREAT BRITAIN. Aircraft Carriers. Illustrious, Victorious, Formidable, Indomitable.



FRANCE. Aircraft Carrier. Béarn.
Space between flight deck and upper deck forward partially blanked
Framework fitted on aft side of funnel.



UNITED STATES. Aircraft Tender. Langley.
Foremost third of flight deck removed.
Two pole masts fitted.
Bridge and Derricks fitted forward.



UNITED STATES. Aircraft Carrier. Saratoga.



UNITED STATES. Aircraft Carrier. Ranger.

(NOTE.—Funnels hinge outboard.)
Signal masts fitted at ends of flight deck.



UNITED STATES. Aircraft Carrier. Enterprise.



JAPAN. Aircraft Carrier. Hosho.
Funnels hinge outboard.



JAPAN. Aircraft Carrier. Ryujo.



JAPAN. Aircraft Carrier. Koryu.



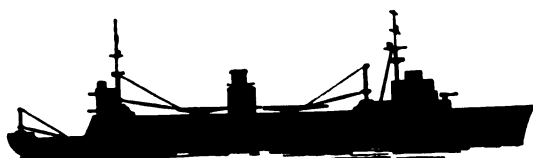
SWEDEN. Aircraft Cruiser. Gotland.



ITALY. Seaplane Carrier. Miraglio.



GREAT BRITAIN. Seaplane Carrier. Albatross.
Catapult fitted forward.



FRANCE. Aviation Transport. Commandant Teste.

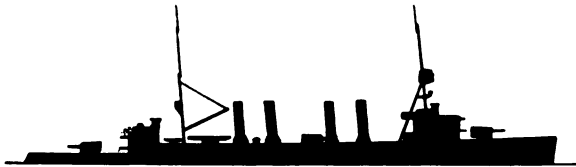


JAPAN. Seaplane Carrier. Motosu.

CRUISERS AND COAST DEFENCE SHIPS.



JAPAN. Cruisers. ("Sendai" class.) Naka, Sendai, Mutsu.
Catapult fitted abaft mainmast. Aircraft platform forward removed.
The mainmast is of tripod construction and is fitted with a derrick on its after side.



UNITED STATES. Scout Cruisers. ("Omaha" class.) Cincinnati, Concord, Detroit, Marblehead, Memphis, Milwaukee, Omaha, Raleigh, Richmond, Trenton.
There are small differences in the arrangement of guns aft.
Topmasts shortened.



ROYAL AUSTRALIAN NAVY. Cruiser. Adelaide.
Forward funnel removed and superstructure modified.



ITALY. Light Cruiser. Taranto (ex-German Strassburg).



GREAT BRITAIN. Cruisers. ("London" class.) Devonshire, London, Sussex. ("Norfolk" class.) Norfolk.
Fore topgallant mast added.
ROYAL AUSTRALIAN NAVY. Cruiser. Shropshire.



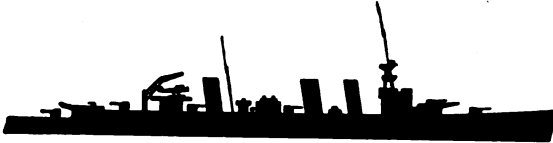
GREAT BRITAIN. Cruisers. ("Kent" class.) Cumberland, Suffolk, Kent, Berwick.

Kent has a sternwalk.

Kent and Berwick are flush-decked.

ROYAL AUSTRALIAN NAVY. Cruiser. ("Kent" class.) Australia.

No hangars fitted.



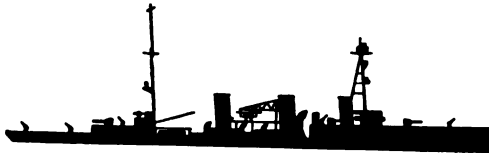
GREAT BRITAIN. Cruisers. ("E" class.) Emerald, Enterprise.

In Enterprise the forward 6-in. guns are in a twin mounting on the fore-castle deck.



JAPAN. Light Cruisers. ("Kuma" class.) Kiso, Kitakami, Kuma, Oi, Tama. ("Matsuyama" class.) Isuzu, Matsuyama, Nagara, Yura, Kinu, Abukuma.

Catapult fitted before mainmast. The mainmast is of tripod construction and is fitted with a derrick on its fore side.
Bridgework modified and anti-flare tops fitted to funnels.



SOVIET UNION. Cruiser. Preflintern.



JAPAN. Light Cruisers. ("Tenryu" class.) Tatsuta, Tenryu.



SPAIN. Light Cruiser. Mendez Núñez.

Foremast is tripod. Fore topgallant mast added

A.A. armament fitted between second funnel and mainmast.

Searchlight platform fitted round after funnel.

CRUISERS.



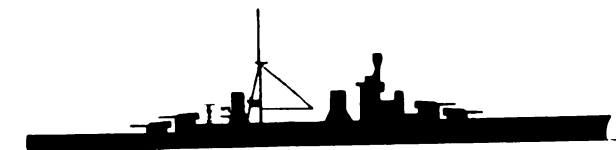
GREECE. Cruiser. Averoff.



ITALY. Scout Cruiser. Quarto.

JAPAN. Cruisers. ("Nachi" class.) Nachi, Myoko, Ashigara, Haguro.
Catapult fitted abaft mainmast.

JAPAN. Cruisers. ("Takao" class.) Takao, Atago, Chokai, Maya.

ITALY. Cruiser. (Modified "Trento" class.) Bolzano.
Forward superstructure faired into funnel. Catapult fitted amidships.
Clinker screens fitted to funnels.ITALY. Cruiser. ("Zara" class.) Gorizia.
Forward superstructure faired into funnel. Catapult fitted forward.
Clinker screens fitted to funnels.
Range-finder fitted abaft after funnel.



JAPAN. Cruisers. ("Furutaka" class.) Furutaka, Kato.
The tops of the funnels are square to the funnels.
Polemast raked.



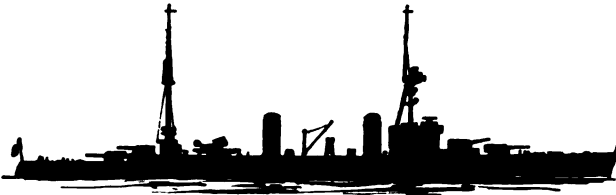
JAPAN. Cruisers. ("Furutaka" class.) Aoba, Kinugasa.
The tops of the funnels are square to the funnels.
Polemast raked.



GREAT BRITAIN. Cruiser. (Improved "Southampton" class.) Belfast.



GREAT BRITAIN. Cruisers. ("Southampton" class.) Newcastle, Sheffield, Birmingham, Glasgow, Liverpool.



FRANCE. Cruisers. ("Duquesne" class.) Duquesne, Tourville. ("Suffren" class.) Suffren, Colbert, Foch, Duplex.
Colbert, Duplex and Foch have tripod mainmasts and the catapulta between the funnels.
Fore topmast shortened in Foch, Duquesne and Tourville and removed in Duplex and Colbert.



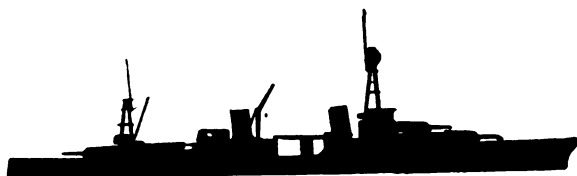
UNITED STATES. Cruisers. ("Astoria" class.) New Orleans, Minneapolis, San Francisco, Tuscaloosa.
Forward funnel fitted with clinker screen.



UNITED STATES. Cruisers. Portland, Indianapolis.
Foremost funnel and fore topmast are raised.



UNITED STATES. Cruisers. ("Pensacola" class.) Salt Lake City, Pensacola.
Crane fitted on fore side of after funnel and derricks on after side.



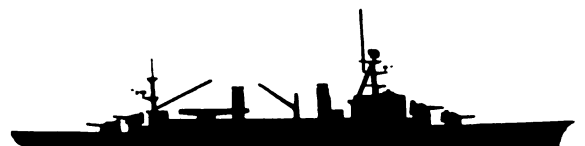
UNITED STATES. Cruisers. ("Chester" class.) Chester, Louisville. ("Augusta" class.) Augusta.
Fore topmast shortened.



UNITED STATES. Cruiser. Wichita.



UNITED STATES. Cruisers. Boise, Brooklyn, Helena, Honolulu, Nashville, Philadelphia, Phoenix, Savannah, St. Louis.



FRANCE. Training Cruiser. Jeanne d'Arc.
The catapulta and fore topmast are removed.



FRANCE. Cruisers. Jean-de-Vienne, La Galissonnière, Marseillaise, Gloire, Montcalm, Georges Leygues.
Catapult fitted on after turret.



ROYAL AUSTRALIAN NAVY. Cruiser. (Modified "Leander" class.) Hobart.
Catapult fitted between funnels.



GREAT BRITAIN. Cruisers. ("Fiji" class.) Ceylon, Jamaica, Gambia, Uganda, Kenya, Mauritius, Nigeria.



GREAT BRITAIN. Cruisers. ("Arethusa" class.) Arethusa, Penelope, Aurora.
Derrick fitted on aft side of after funnel.



GREAT BRITAIN. Cruisers. ("Dido" class.) Charybdis, Cleopatra, Dido, Euryalus, Scyllia, Sirius.



GERMANY. Light Cruiser. Köln.
Polemast fitted on aft side of after funnel. Catapult fitted between funnels.



FRANCE. Cruiser Minelayer. Emile Bertin.
 Derrick fitted on fore side of catapult.
 Searchlight platform built round after funnel.
 Small mast fitted on fore side of after turret.



ITALY. Cruisers. ("Condottieri" class.) Montecuccoli, Muzio Attendolo.



ITALY. Cruisers. ("Attendolo" class.) Eugenio di Savoia, Filiberto Duca d'Aosta.



ITALY. Cruisers. ("Condottieri" class.) Alberico de Barbiano, Alberto di Giussano.
 Fore topmast and stays to mainmast removed.
 Derrick fitted on fore side of mainmast. Bridgework extended.



ITALY. Cruisers. ("Condottieri" class.) Armando Diaz, Luigi Cadorna.
 Fore topmast removed. Catapult fitted between after funnel and "X" turret.
 Derrick fitted on fore side of mainmast.



ITALY. Cruisers. Duca degli Abruzzi, Giuseppe Garibaldi.



ITALY. Cruiser. Bari (ex-German Pillau).



GREAT BRITAIN. Cruiser Minelayer. Adventure. (Stern has been extended.)
Derricks added abreast masts.



NETHERLANDS. Cruiser. Sumatra.
Fore topmast shortened and foremast made larger.
Mainmast shortened, moved forward and fitted with derrick and searchlights.
Aircraft stowed between funnels and crane fitted.



ITALY. Cruiser. ("Trento" class.) Trieste.
Fore topmast removed.
Bridgework extended.



SPAIN. Cruisers. Galicia, Almirante Cervera, Miguel de Cervantes.
The mainmasts are tripods.
Fore topmast and topgallant mast removed.

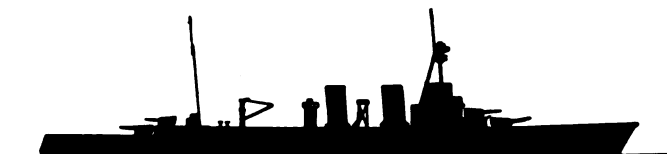


SPAIN. Cruiser. Navarra (ex-Republica).



GERMANY. Light Cruiser. Emden.

Polemast fitted on aft side of after funnel.
Superstructure added before mainmast. Fore topmast shortened.
Mainmast shortened and surmounted by a searchlight platform.



FRANCE. Cruisers. ("Duguay-Trouin" class.) La Motte Picquet, Duguay-Trouin, Primauguet.

Catapult fitted on quarter deck.
Fore topmast removed and mast head modified.



ARGENTINA. Cruiser. La Argentina.



GREAT BRITAIN. Cruisers. ("D" class.) Danae, Dauntless, Dragon.

Main topmast added.



GREAT BRITAIN. Cruisers. ("D" class: repeat vessels.) Delhi, Dunedin, Diomedes, Despatch, Durban.

Foremost gun in Diomedes is housed in a gunhouse.
Topmasts removed.



GREAT BRITAIN. Cruisers. ("Ceres" class.) Cardiff, Ceres, Curacao.

For Coventry, see below.



GREAT BRITAIN. Anti-Aircraft Cruisers. ("Carlisle" class.) Colombo, Capetown.



GREAT BRITAIN. Cruiser. Carlisle.
Topmast removed.



GREAT BRITAIN. Cruisers. ("Caledon" class.) Caledon, Caradoc.
Mainmast lengthened.



SOVIET UNION. Cruiser. Krasni Kavkaz.
Catapult fitted between mainmast and funnel.
A.A. guns fitted between funnels.



SWEDEN. Coast Defence Ship. Gustav V.
Fore topmast added. Bridgework enlarged.
Mainmast and derrick removed.



SWEDEN. Coast Defence Ship. Sverige.



SWEDEN. Coast Defence Ship. Drottning Victoria.



JAPAN. Cruisers. Suzuya, Kumano, Tene, Tikuma.



SPAIN. Cruiser. Canarias.
Masts removed.



FRANCE. Cruiser. Algérie.
Superstructure amidships added.
Crane replaced by two others.



GERMANY. Cruiser. Admiral Hipper.



GERMANY. Light Cruiser. Leipzig.
Polemast fitted on aft side of funnel. Catapult fitted between funnel and foremast.
Crane fitted on fore side of funnel. Fore topmast shortened.



GERMANY. Light Cruiser. Nürnberg.



GREAT BRITAIN. Cruisers. ("Leander" class.) Leander, Achilles, Orion, Ajax.



NETHERLANDS. Cruiser. Tromp.



ARGENTINA. Cruisers. Almirante Brown, Vintcento de Mayo.
Fore topmast shortened, main topmast lengthened.
Derrick fitted on fore side of mainmast.
Searchlight platform fitted on mainmast.
Superstructure built on aft side of mainmast.



JAPAN. Light Cruiser. Yubari.
Masts and funnel raked aft.



FINLAND. Armoured Gunboats. Vainämöinen, Ilmarinen.



NORWAY. Minesweeping and Training Ship. *Olav Trygvason*.
Both cranes are fitted abreast mainmast.



GREAT BRITAIN. Cruisers. *Frobisher*, *Hawkins*.



DENMARK. Cruiser. *Niels Juel*.

FLOTILLA LEADERS AND DESTROYERS

(See pp. 198-248.)



FRANCE. Flotilla Leaders. Cassard, Vanquelin, Korsaint, Yartu, Le Chevalier Paul, Algie, Albatros, Epervier, Milan, Gerfaut, Vautour.



ITALY. Destroyers. Gen. A. Cantore, Gen. A. Chinotto, Gen. A. Papa, Gen. A. Casalone, Gen. M. Prestinari, Gen. C. Montanari, A. Bassini, E. Cesenz, F. Stecco, G. Carini, G. Medici, G. la Farina, G. la Masa, G. Sirtoti, N. Fabrizi.
Bridgework extended.



FRANCE. Flotilla Leaders. Guépard, Lion, Vauban, Valmy, Verdun.



GERMANY. Destroyers. "Maase" class.



UNITED STATES. Destroyers. The "Flush Deck" type; all U.S. destroyers except these with three funnels.
Mainmast shortened.
Also, Great Britain—"Town" class.



GREAT BRITAIN. Destroyers. "Tribal" class.



FRANCE. Flotilla Leaders. Tigre, Léopard, Lynx.
Platform added before after turrets.
Léopard and Lynx are under the control of the Free French.



YUGO SLAVIA. Flotilla Leader. Dubrovnik.



FRANCE. Destroyers. Mistral, Ouragon, Simoun, Tempête, Tramontane, Typhon, Trombe, Tornado.



JAPAN. 1st Class Destroyers. "Fubuki" class. (23 ships.)



ITALY. Flotilla Leaders (Scouts). "Navigatori" class. (11 ships.)
Mainmast lengthened.

POLAND. Destroyer. Burza is similar.
Mainmast shortened.



FRANCE. Flotilla Leaders. "Le Fantasque" class. L'Audacieux, Le Malin, Le Terrible, Le Triumphant, L'Indomitable.
Control platform added abaft after funnel.
Le Triumphant is under the control of the Free French.



GREAT BRITAIN, Flotilla Leader. Ingfield.



GREAT BRITAIN. Flotilla Leader. Faulkner.



JAPAN. 1st Class Destroyers. "Mutsuki" class (12 ships), and "Kamikaze" class (9 ships).



JAPAN. 1st class Destroyers. "Minekaze" class (16 ships).



GERMANY. Destroyers. Hs, Wolf, Tiger, Luchs, Jaguar, Leopard, Seeadler, Greif, Albatros, Kondor, Falke, Möwe.



GREAT BRITAIN. Destroyers. "Acasta," "Beagle," "Cruader" and "Defender" classes. "Acasta" and "Cruader" classes have davits at stern.

Flotilla Leaders. Duncan, Kompenfelt.



GREAT BRITAIN. Destroyers. "Greyhound," "Herc" and "Intrepid" classes.



PORTUGAL. Destroyers. Vega, Lima, Dao, Tejo, Douro.

COLOMBIA. Destroyers. Antioquia, Caldas.



ARGENTINA. Flotilla Leaders. Mendoza, La Rioja, Tucuman.



ITALY. Flotilla Leaders (Scouts). Carlo Mirabella, Augusto Riboty.



GREAT BRITAIN. Flotilla Leaders. Kestrel, Douglas, Campbell, Mackay, Blenheim, Montrose.

ROYAL AUSTRALIAN NAVY. Flotilla Leader. Stuart.

SPAIN. Flotilla Leaders. Almirante Valdes, etc., generally similar.



NETHERLANDS. Destroyers. Van Ghent, Piet Hein, Banckert, Van Nes.



GREAT BRITAIN. Destroyers. Vanessa, Vanoc, Vanquisher, Velez, Vendetta, Versatile, Vesper, Vidette, Violent, Vivacious, Vimy (late Vancouver), Valorous, Viscount, Walker, Walpole, Walrus, Warwick, Watchman, Westcott, Winchelsea, Wrestler, Vansittart, Venomous, Verity, Volunteer, Wanderer, Windsor.



GREAT BRITAIN. Destroyers. Whitehall, Whitshed, Witherington, Wivern, Wolverine, Worcester, Wishart, Wish.



GREAT BRITAIN. Destroyers. Ambuscade, Amazon.



CHILE. Destroyers. Serrano, Orella, Niquelme, Hyatt, Vidella, Alder, Mainmast heightened.



SWEDEN. Destroyers. Klas Horn, Klas Uggla, Ehrensköld, Nordenskjöld. Davit fitted at stern.



JAPAN. 2nd Class Destroyers. "Wakatake" class (7 ships), and "Kaya" class (19 ships).



ITALY. Destroyers. Q. Sella, F. Crispi. Bridgework extended. Platform fitted round mainmast.



UNITED STATES. Destroyers. "Mahan" class.



SOVIET UNION. Destroyers. "Leningrad" class.



JAPAN. Destroyers. "Hibiki" class.



JAPAN. Destroyers. "Ariake" class (6 ships).



GREAT BRITAIN. Flotilla Leader. Faulkner. Destroyers. "Eclipse" and "Fearless" classes similar but gun between funnels omitted.



GREAT BRITAIN. Destroyers. Admiralty "G" class.



ITALY. Destroyers. San Saverio, Martino. Bridge and foremost funnel heightened.



ITALY. Destroyers. Turbina, Euro, Oetre. Bridge and foremost funnel heightened.



DENMARK. Torpedo Boats (1st Class). Gjelleren, Hogen, Ornen, Laxen, Dragen, Hvalen.



UNITED STATES. Destroyers. "Benson" class.



UNITED STATES. Destroyers. Dunlap, Fanning.



UNITED STATES. Destroyers. Grayson, Eberle, Plunkett, Kearney, Gwin, Meredith, Livermore, Monssen, Woolsey, Ludlow, Edison, Ericsson, Wilkes, Nicholson, Swanson, Ingraham, Fletcher, Radford, Jenkins, La Valette, Nicholas, O'Bannon, Chevalier, Percival.



UNITED STATES. Destroyers. "Farragut" class.



GREAT BRITAIN. Destroyers. "Javelin" and "Kelly" classes.



GREAT BRITAIN. Destroyers. "Hunt" class.



UNITED STATES. Destroyers. "Maury" class.



POLAND. Destroyer. Blyskawica.



SOVIET UNION. Destroyers. "Stremitsni" class.



UNITED STATES. Destroyers. "Somers" class.



ITALY. Destroyers. Dardo, Freccia, Strale, Sestia, Folgore, Lupo. Bridgework extended. Control platform fitted between torpedo tubes.



UNITED STATES. Destroyers. "Gridley" class.

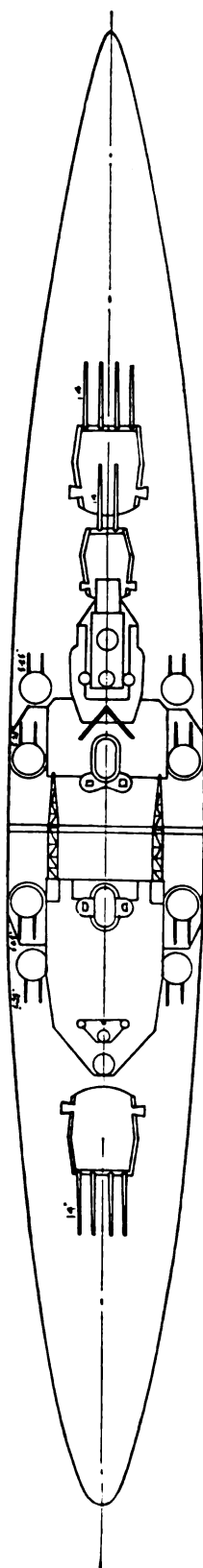
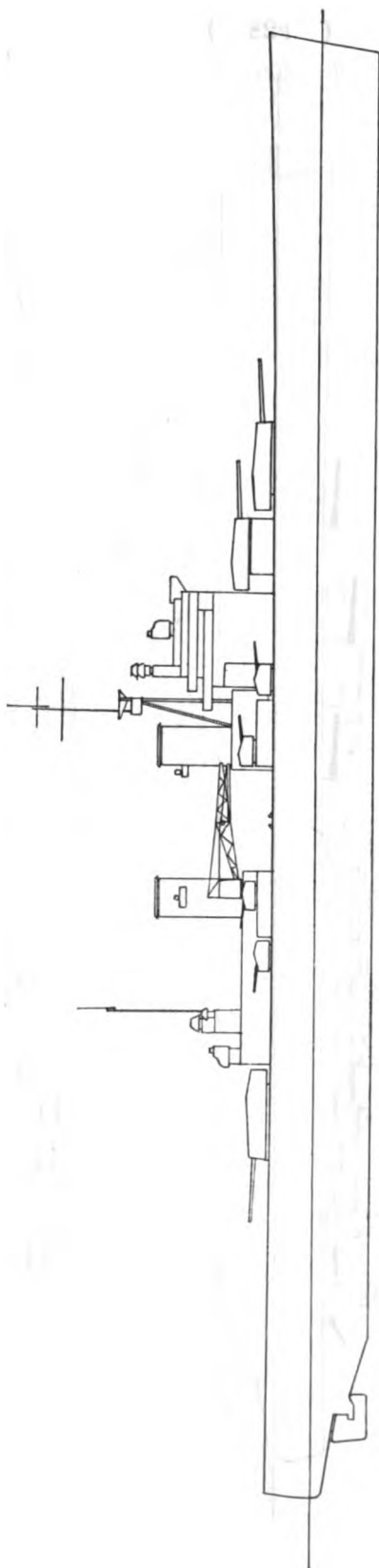


GREECE. Destroyers. Spetzai and Couriotes.

PICTORIAL SECTION PLANS AND ELEVATIONS OF WARSHIPS

GREAT BRITAIN. BATTLESHIPS.

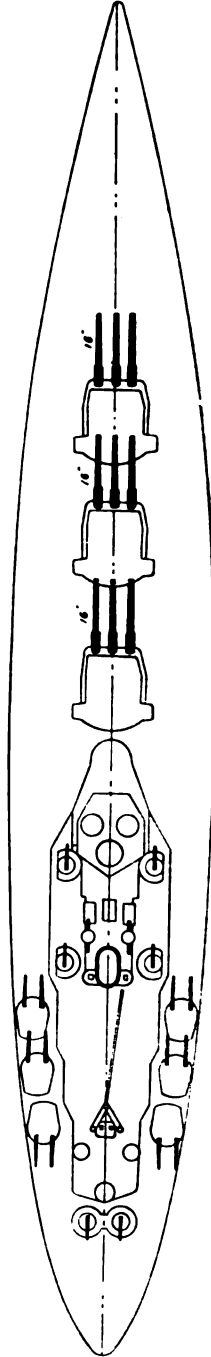
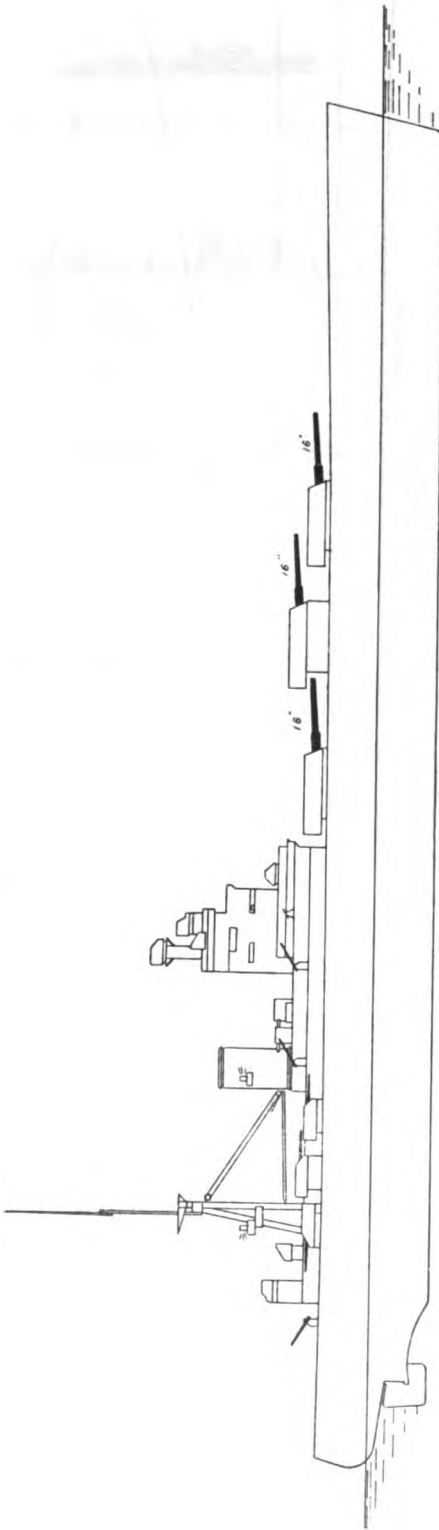
King George V. Duke of York. Howe. Anson.



Length 745 ft.; 25,000 tons; Completed 1941-42.
Armament, 10-14-in.; 16-6-25-in.; 5 m.p.d.; 4 Aircraft; Catapult.

GREAT BRITAIN.

BATTLESHIPS.

Nelson.
Rodney.

Length (extreme), 710 ft.; Rodney, 53,900 tons; Nelson, 53,500 tons; Speed, 23 knots; Completed, 1927.

Armament, 9—16-in.; 13—6-in.; 6—4.7-in. A.A.; 4—3-pr.; 2—2-pr. Pom Poms (3 in Rodney); 11 L.; 5 M.; 8—24-in. submerged torpedo tubes.

NOTE.—A 14 in. waterline armour belt extends from approximately the foremost 16-in. turret to approximately the aftermost 6-in. turret. The turret armour varies from 16-in. to 9-in. Correction to plan.—Mast structure increased. Nelson has a crane amidships. Rodney has a catapult on "O" turret.

GREAT BRITAIN.

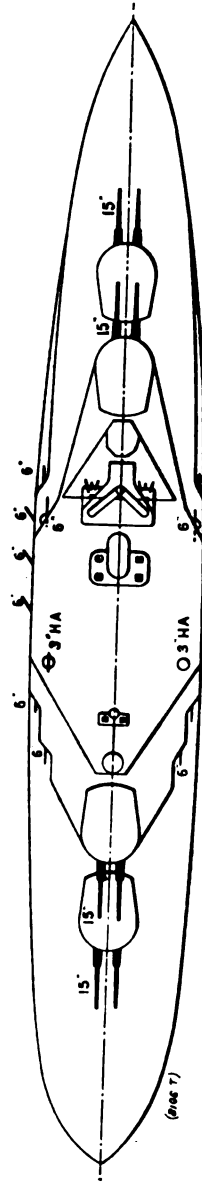
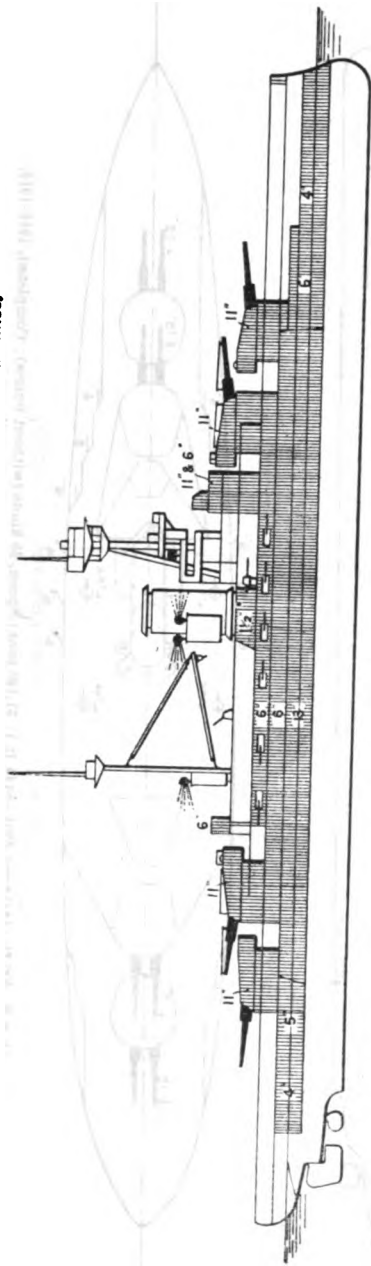
BATTLESHIPS.

Royal Sovereign.

Revenge.

Resolution.

Ramillies.



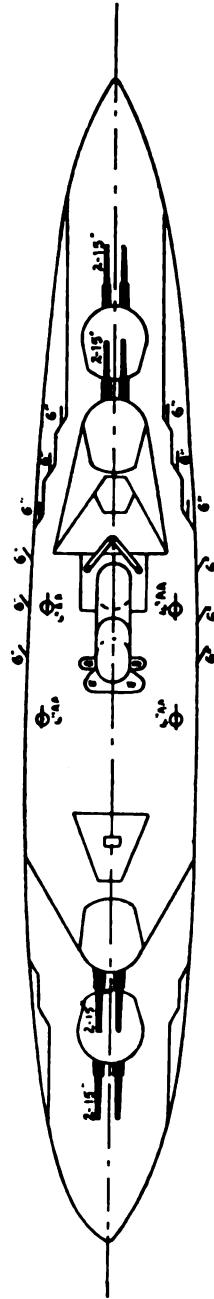
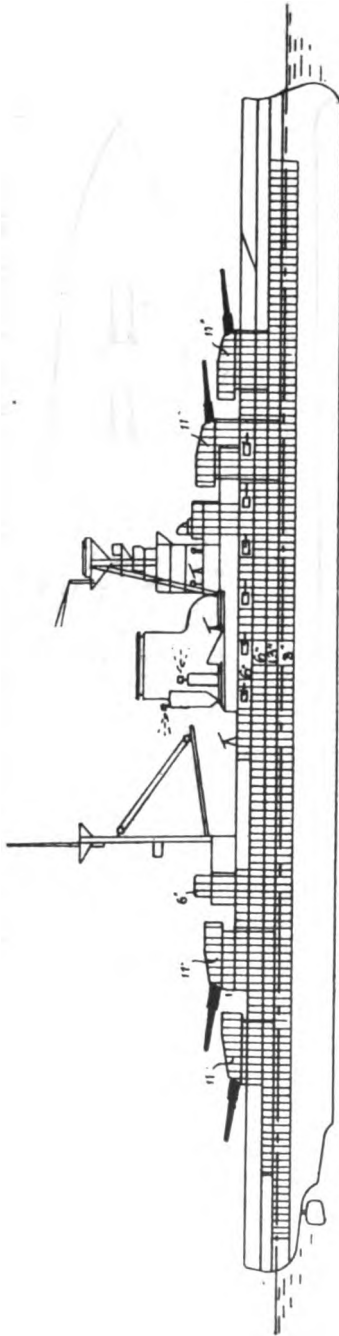
Length (extreme), 620 ft. 6 in.; Length B.P., 550 ft.; Speed, 22 knots (without bulges); Completed, 1916-17.
 Armament, 8-15-in.; 12-6-in. A.A.; 4-3-pr. 5-in. A.A.; 2-21-in. submerged torpedo tubes in Revenge. Revenge and Ramillies have
 Corrections to plan.—Searchlights on mainmast and the superstructure 6-in. guns now removed. The 4-in. A.A. guns are fitted on the superstructure
 instead of the 3-in. H.A. shown. Fore topmast removed. Main topgallant mast fitted.
 • Revenge, 625 ft. 9 in.

Resolution and Ramillies have tripod mainmasts, a catapult on "X" Turret and a crane abreast the mainmast, and carry 1 aircraft each.
 Resolution has cylinder screen fitted to funnel.

GREAT BRITAIN

BATTLESHIP.

Malaya



Length B.P., 600 ft. ; (extreme 639½—644½ ft.) ; 21,100 tons ; Speed, 25 knots (without bulges) ; Completed, 1915-1916.
 Armament, 8—15-in. ; 15—6-in. ; 8—4-in. A.A. ; 4—8-pr. ; 6 M. ; 10 L.

Correction to plan. Add main topgallant mast, catapult before mainmast, a hangar and crane each side abreast funnel. Derricks removed.

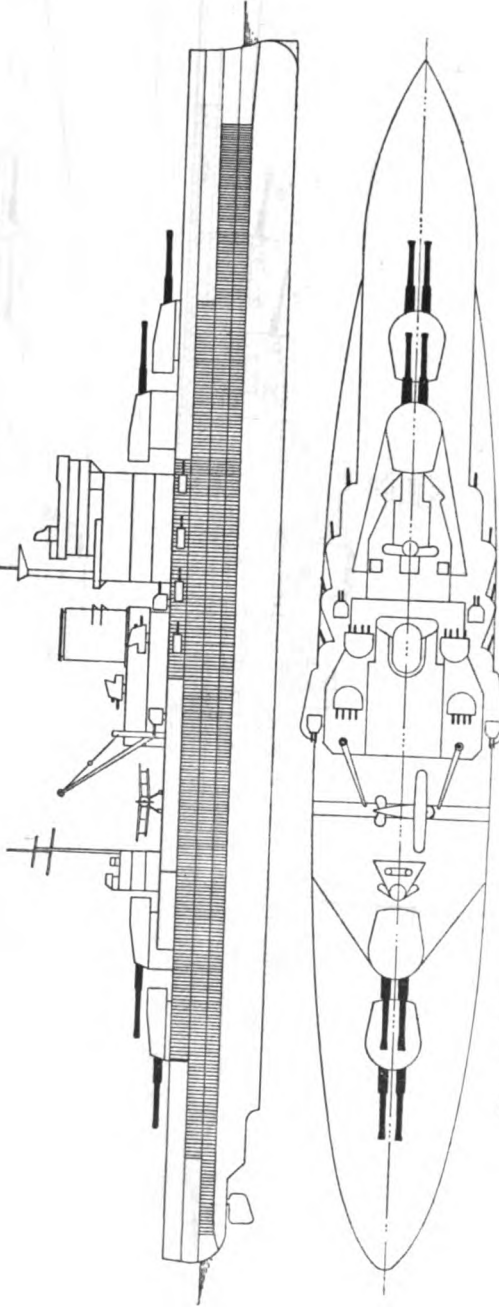
GREAT BRITAIN.

BATTLESHIPS.

Waspite.

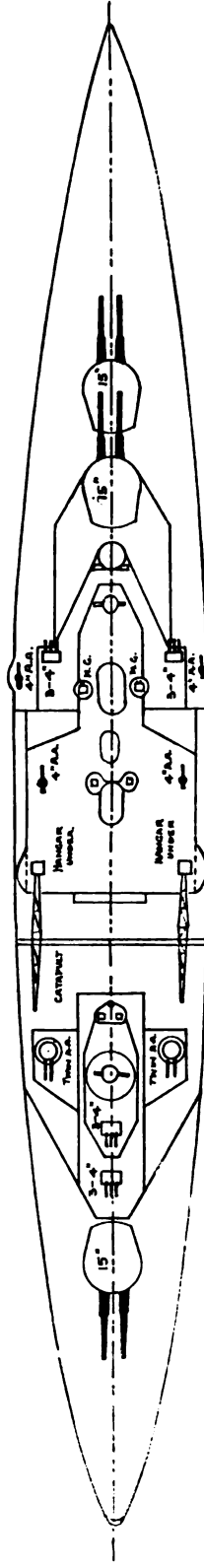
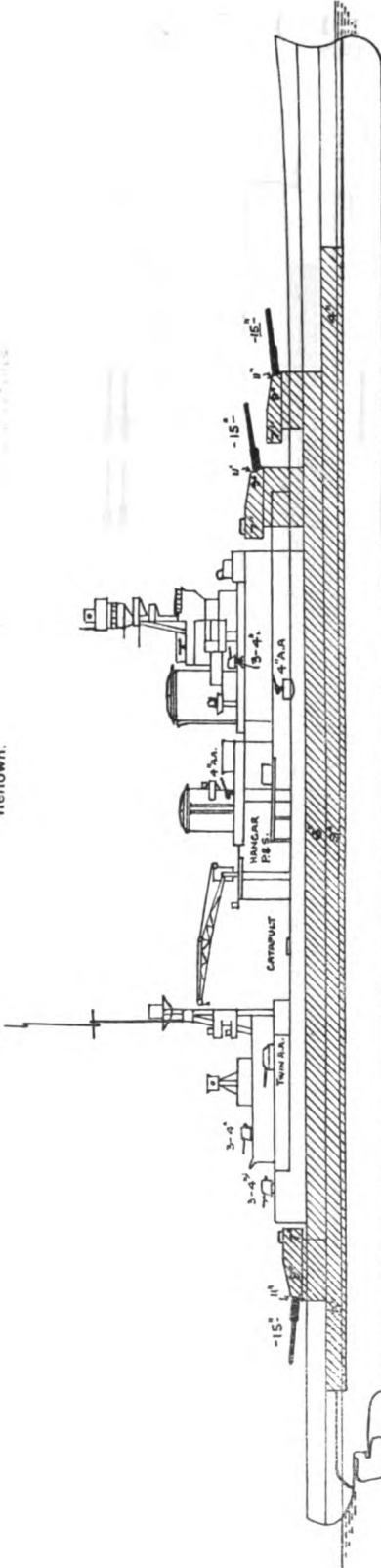
Queen Elizabeth.

Vallant.



Length B.P., 600 ft.; (extreme 689 ft. 8 in.—646 ft.); 31,100 tons; Speed, 25 knots; Completed, 1915-1916.
 Armament, 8—16-in.; 12—6-in.; 8—4-in. A.A.; 4—3-pdr. Pom. Pom.; 1 catapult; 1 aircraft. Vallant has 4—4-in. A.A.
 Notes.—Queen Elizabeth and Vallant have tripod foremasts.
 Sternwalk fitted in Waspite and Queen Elizabeth.

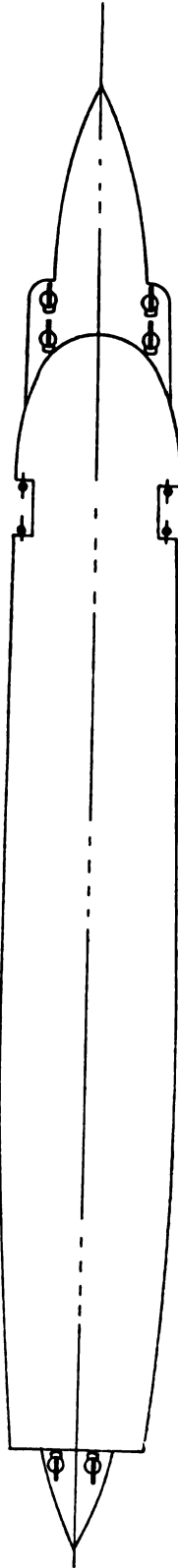
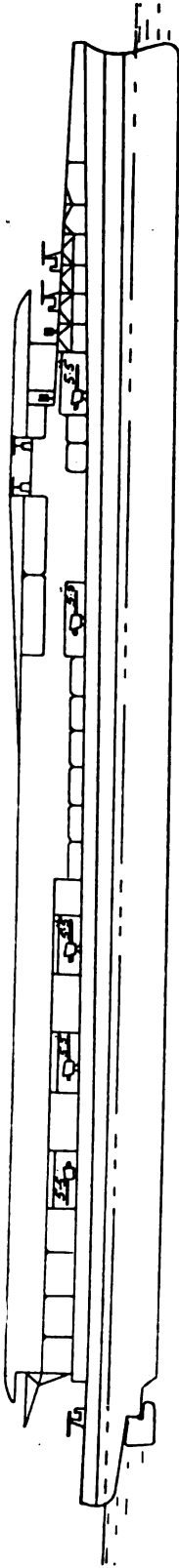
GREAT BRITAIN **BATTLE-CRUISER** *Renown.*



Length (extreme), 704 ft. 2 ins. ; 33,000 tons ; Speed, 31½ knots (without bulges) ; Completed, 1916. Reconstructed 1939.
 Armament, 6—15-in. ; 12—4-in. A.A. ; 2 twin A.A. ; 2 multi-machine guns ; 1 catapult ; 4 aircraft.
 Correction to plan.—Forward superstructure modified. Topmast and topgallant mast fitted to foremast.
 The after funnel is similar to the foremast funnel.
 Tripod mainmast replaced by polemast. Main topgallant mast removed.

GREAT BRITAIN
AIRCRAFT CARRIER.

Furious.



Length (extreme), 788 ft. 6 ins. ; 22,460 tons ; Speed, 31 knots ; Completed as a cruiser, 1917 ; Conversion to aircraft carrier completed, 1925.

Armament, 10—5·5-in. ; 8—4-in. A.A. ; 4—8-pr. ; 4—2-pr. ; 40 smaller ; 33 aircraft.

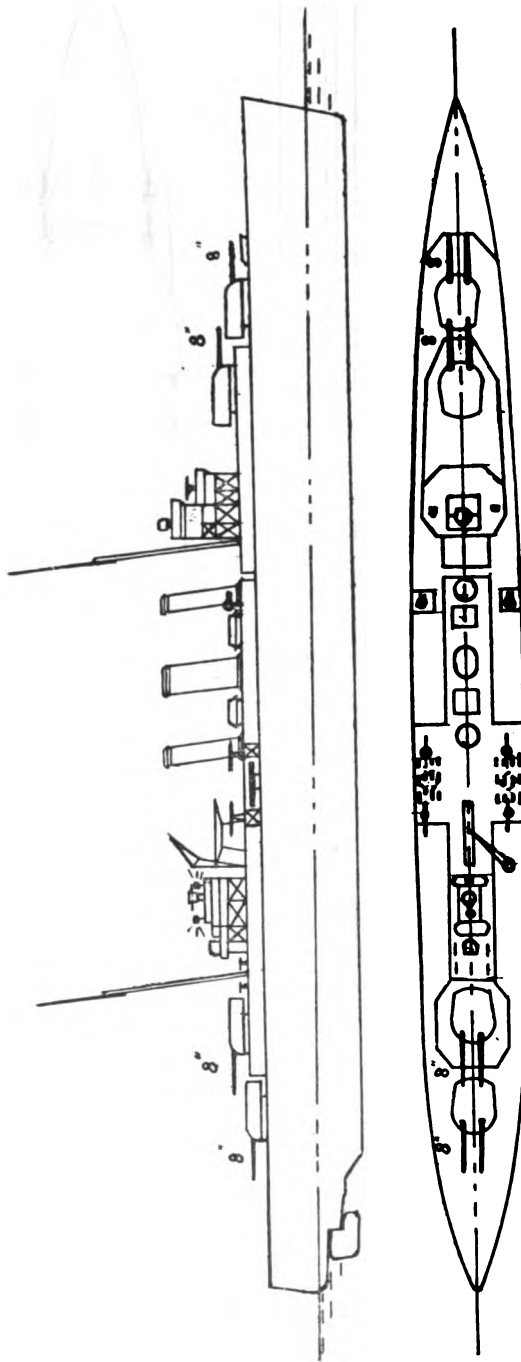
Three wireless masts added each side of flight deck. Quarter deck has been raised one deck. Top deck forward has been levelled off and closed in.

Superstructure, polemast and spotting-top fitted amidships on the starboard side.

GREAT BRITAIN.

CRUISERS.

"London" Class.
 London. Devonshire
 Sussex.
 Royal Australian Navy. Cruiser. Shropshire.
 "Norfolk" Class.
 Norfolk.*



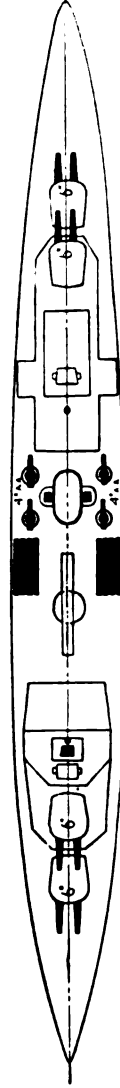
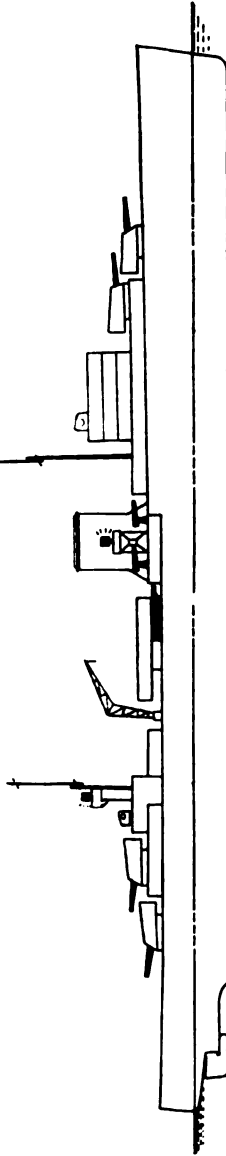
Displacements, 9,780-9,900 tons; Length (extreme), 630 ft.; Norfolk and Devonshire, 633 ft. Armament, 8-8-in.; 8-4-in. A.A.; 4-3-pr.; 4-2-pr.; Pom Poms; 4 M.; 8 L.; 8-21-in. torpedo tubes; 1 aircraft; 1 catapult.
 * In Norfolk the seaplane crane and the 4-4-in. guns are slightly forward of the positions shown.
 Fore topgallant mast added.

GREAT BRITAIN.

CRUISERS.

"Leander" Class.

Leander. Achilles. Orion. Ajax.



Displacement, 6,985-7,270 tons; Length (extreme), 564 ft. 6 ins.; Speed, 32½ knots. Armament, 8-6-in., 8-4-in. A.A., 4-3-pr. 8 torpedo tubes, 1 catapult; 2 aircraft. Achilles has 4-6-in. A.A.

Leander and Achilles are attached to New Zealand division and have 1 aircraft.

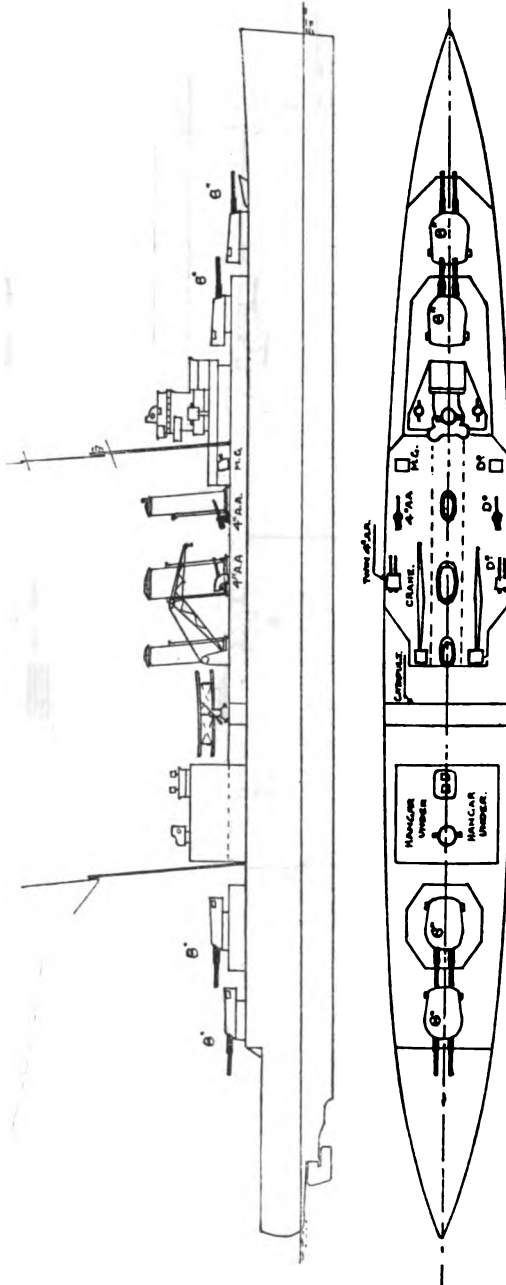
GREAT BRITAIN.

CRUISERS.

"Kent" Class.

Berwick.	Kent.	Cumberland.	Suffolk.	Australia.*
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(As reconstructed 1938-1938.)



Length (extreme), 680 ft.; 10,000 tons; Speed 31½ knots; Completed 1928. Armament, 8—8-in.; 8—4-in. A.A.; 2 multi-machine guns; 1 catapult; 8 aircraft.

Kent, Australia and Canberra have 1 aircraft; Cumberland and Suffolk have 6—4-in. A.A.; Australia and Canberra have 4—4-in. A.A.

NOTES.—Berwick, Kent, Australia and Canberra are flush-decked.

* Royal Australian Navy. Australia is not provided with hangars.

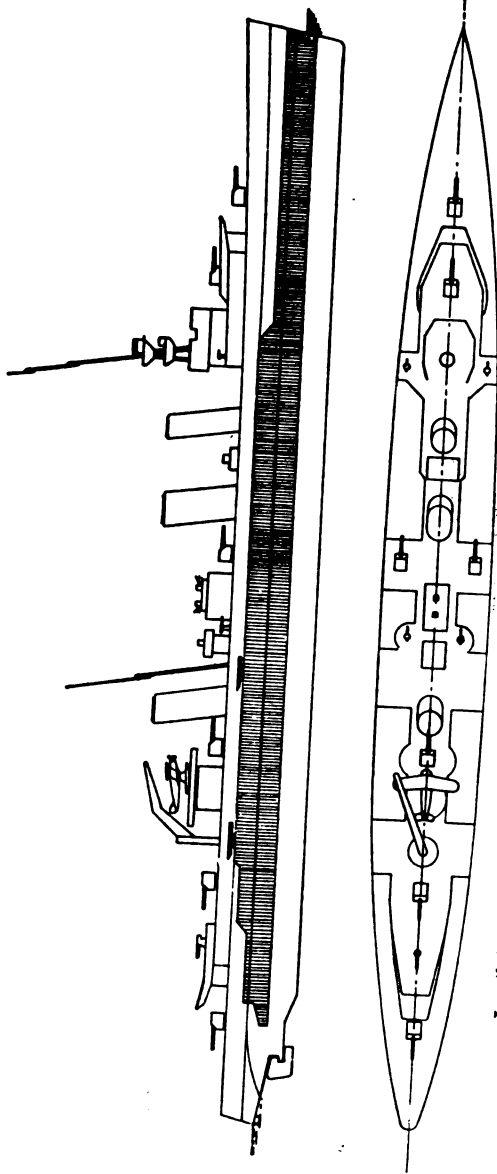
GREAT BRITAIN.

CRUISERS.

"G" Class.

Emerald.

Enterprise.*



Length (extreme), 570 ft. ; Length R.P., 535 ft. ; Emerald, 7,550 tons ; Enterprise, 7,580 tons ; Speed, 33 knots.
Armament, 7-6-in. ; 3-4-in. A.A. ; 4-6-pr. Pom Poms ; 2 M. ; 8 L. ; 16-21-in. torpedo tubes ; 1 catapult ; 1 aircraft.
* In Enterprise the two forward 6-in. guns are mounted in a twin mounting on forecastle deck.

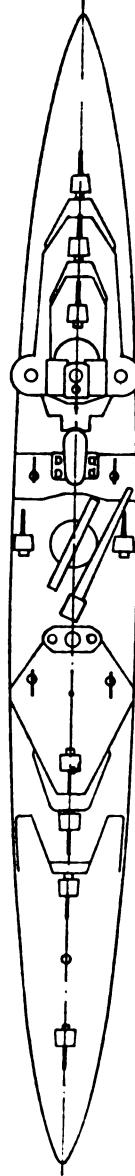
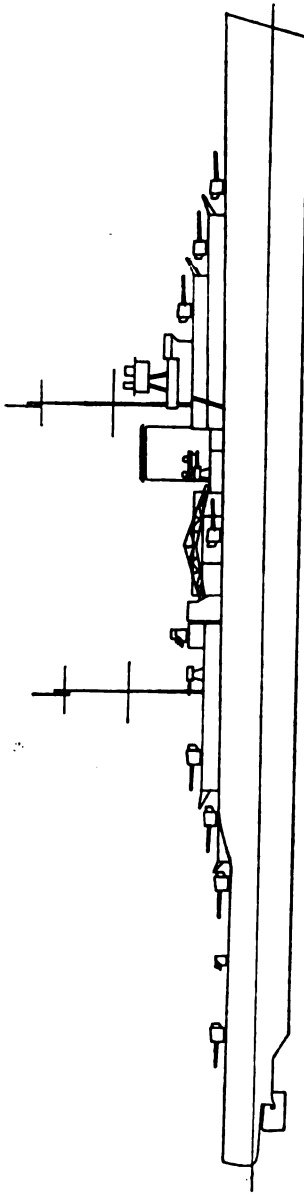
GREAT BRITAIN.

CRUISERS.

"Hawkins" Class.

Hawkins.

Frobisher.



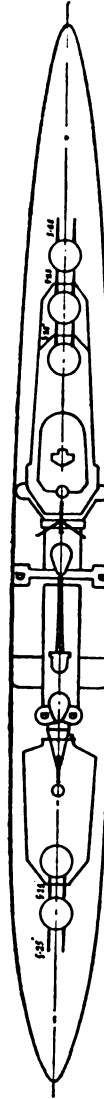
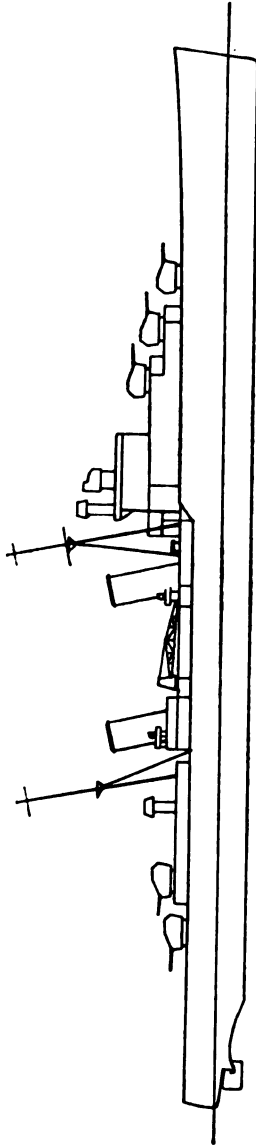
Length (extreme), 606 ft. ; Length B.P., 568 ft. ; 9,550—9,800 tons ; Speed : Hawkins 29½ knots ; Frobisher 30½ knots.
Armament : 9—6-in. ; 4—6-in. A.A. ; 4—5-pr. ; 2 M. ; 8 L. ; 4 torpedo tubes

GREAT BRITAIN.

CRUISERS.

"Dido" Class.

Charybdis. Cleopatra. Dido. Euryalus. Scylla. Sirius.



5,450 tons.

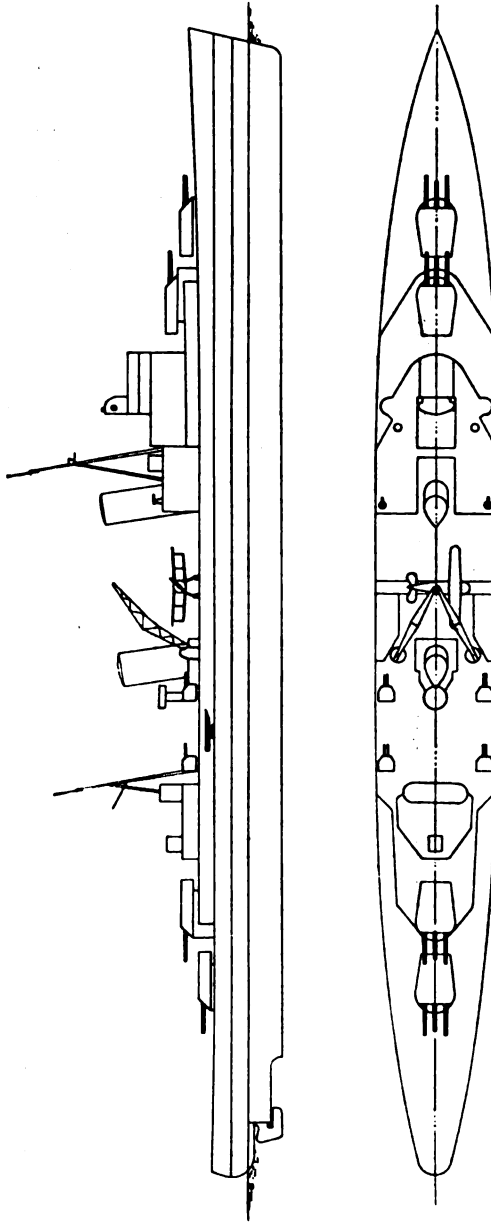
Armament, 10—6-25-in.; 6—21-in. torpedo tubes; 1 catapult; 1 aircraft.

GREAT BRITAIN.

CRUISERS.

"Southampton" Class.

Newcastle, Sheffield, Birmingham, Glasgow, Liverpool.



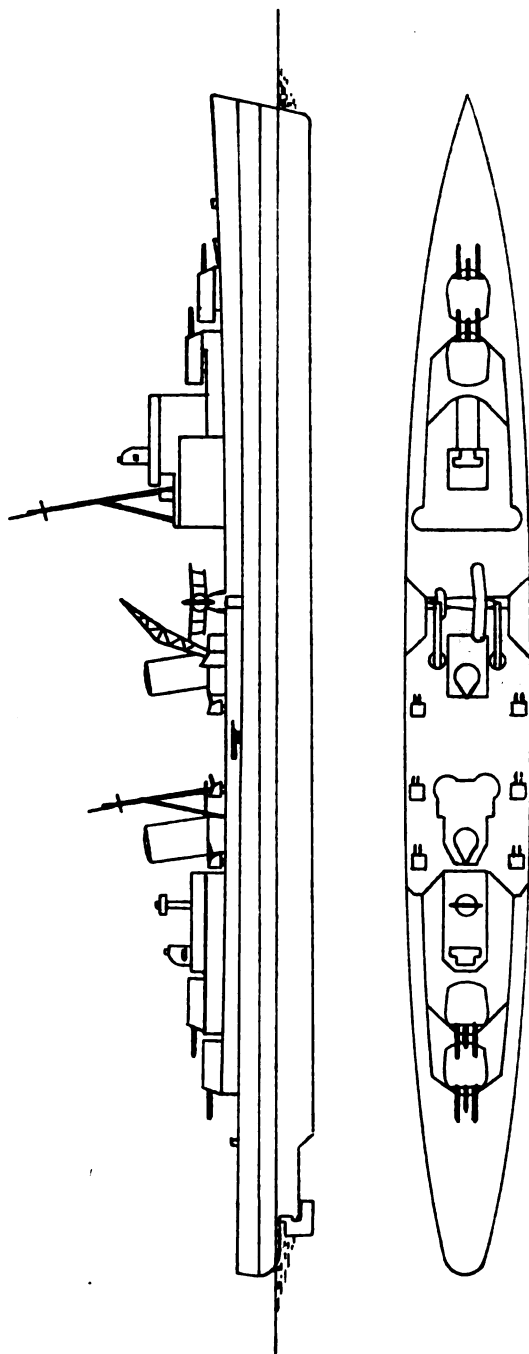
Length (extreme), 501 ft. 6 ins.; 9,100 tons (Liverpool and Manchester 9,400 tons); Speed, 32 knots; Completed, 1907-08.
Armament, 12—6-in.; 8—4-in. A.A.; 2—2-pr.; 6—21-in. torpedo tubes; 1 catapult; 3 aircraft.

GREAT BRITAIN.

CRUISER.

Improved "Southampton" Class.

Belfast.



Length (extreme), 613 ft. 6 ins.; 10,000 tons; Speed, 32½ knots.

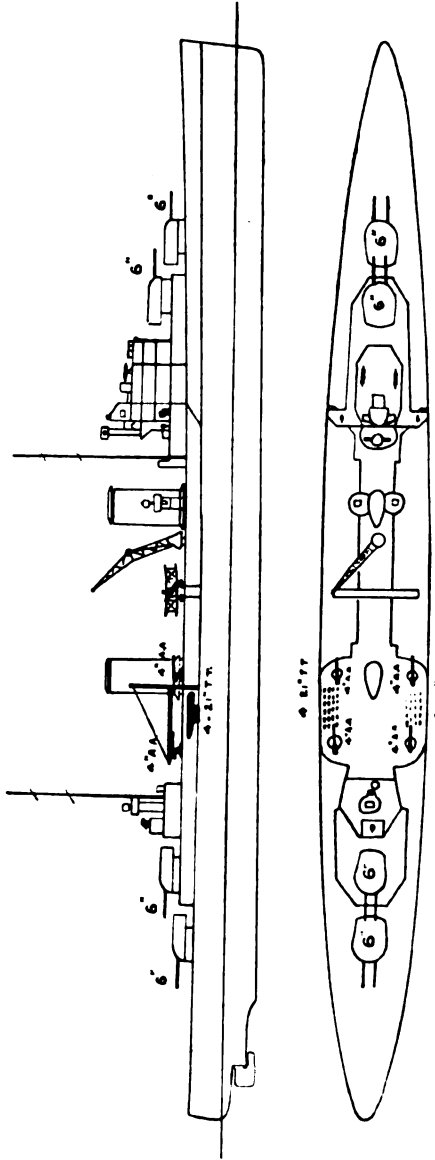
Armament 12—6-in.; 12—4-in. A.A.; 20 smaller guns; 6 torpedo tubes.

COMMONWEALTH OF AUSTRALIA.

CRUISER.

Modified "Leander" Class.

Hobart (ex-Apollo).



Displacement, 7,000 tons ; Length (extreme), 560 ft. ; Speed, 23½ knots ; Completed, 1906.
Armament, 8-6-in. : 8-4-in. A.A. : 18 smaller guns ; 4 quadruple 21-in. torpedo tubes ; 1 catapult ; 2 aircraft.

GREAT BRITAIN.

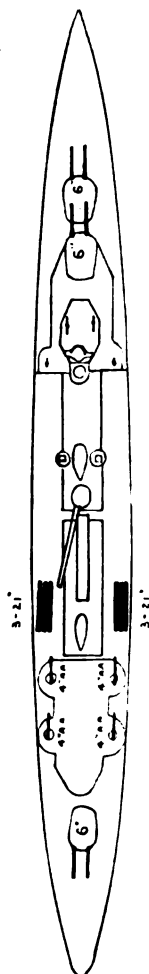
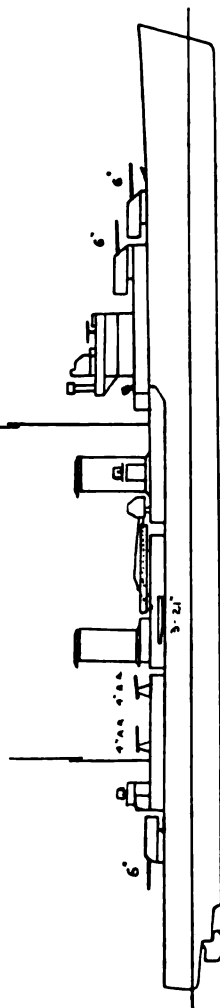
CRUISERS.

"Arcthusa" Class.

Arcthusa.

Penelope.

Aurora.



Displacement, 5,920-6,970 tons; Length (extreme), 506 ft.; Speed, 39½ knots; Completed 1935-37.
 Armament, 6-6-in.; 2-3-pr.; 18 smaller; 2 triple 21-in. torpedo tubes; 1 catapult, 1 aircraft.

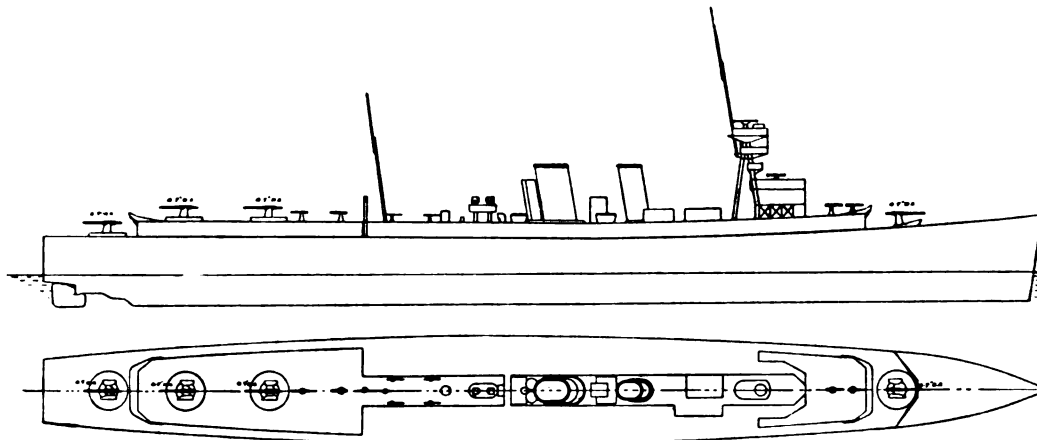
Aurora and Penelope have 4 twin 4-in. A.A. mountings instead of singles.

Derrick fitted on aft side of after funnel.

GREAT BRITAIN.

CRUISER MINELAYER.

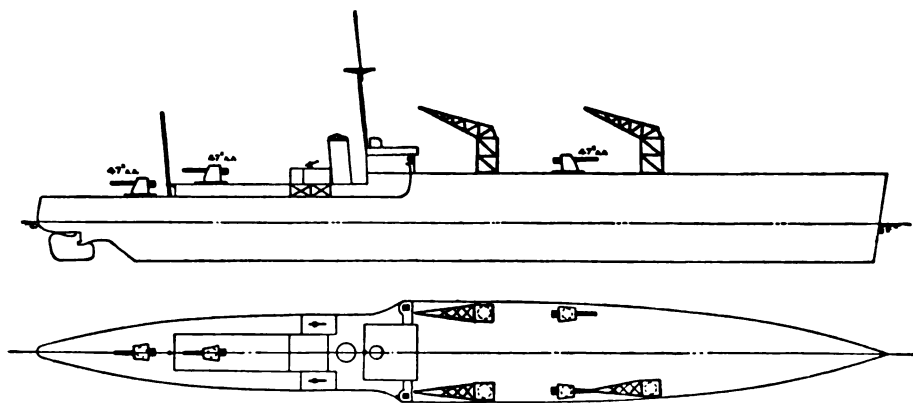
Adventure.



Length (extreme), 539 ft. ; Length B.P., 500 ft. ; 6,740 tons ; Speed, 28 knots.
Armament, 4-4.7-in. A.A. ; 4-8-pr. ; 4-2-pr. ; 2 M. ; 8 L. ; 810 mines.
Stern has been lengthened and rounded in plan. Derricks added abreast masts.

SEAPLANE CARRIER.

Albatross.



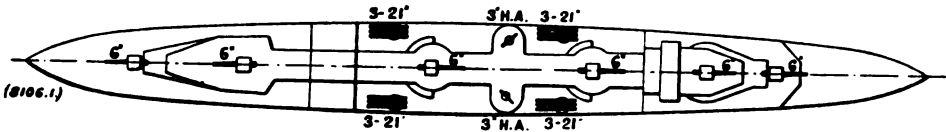
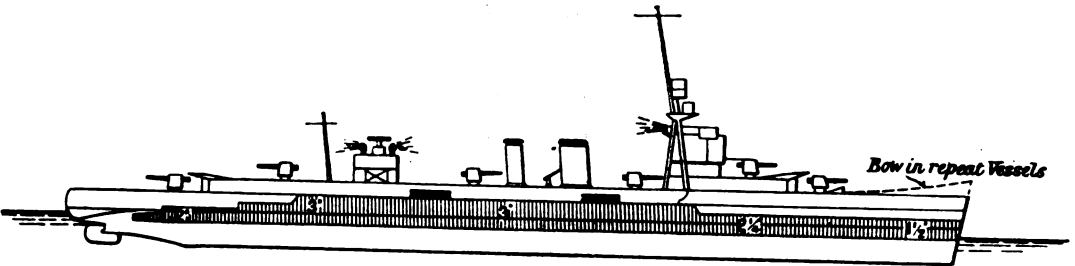
Length, 443½ ft. ; 4,800 tons ; Speed, 21 knots ; Completed, 1929.
Armament, 4-4.7-in. A.A. ; 4-2-pr. Pom Poms ; 4-8-pr. ; 4 M. ; 20 L. ; 9 seaplanes.
Catapult fitted forward.

GREAT BRITAIN.

CRUISERS.

"D" Class.

*Despatch. *Diomedes. Danae. Dauntless. Dragon. *Delhi.
*Durban.



Length, 472½ ft. ; 4,850 tons ; Speed, 29 knots ;
Armament, 6—6-in. ; 8—4-in. A.A. ; 4—8-pr., 2—2-pr. ; 2 M. ; 8 L. ; 12—21-in. torpedo tubes.

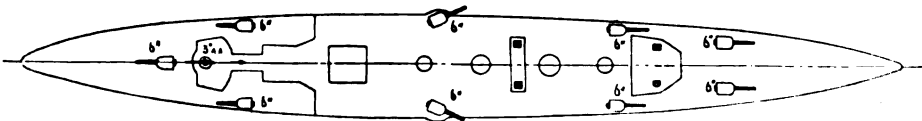
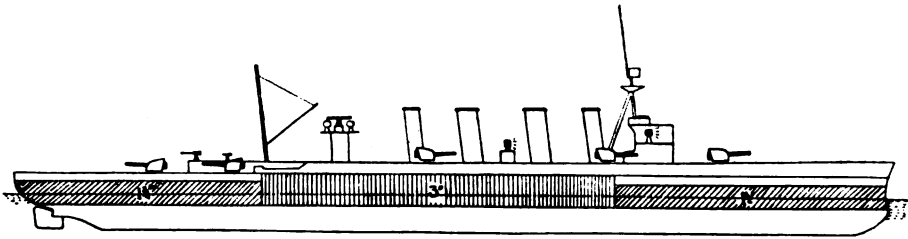
Main topmast fitted. Foremost gun in Diomedes housed in gunhouse.

* Repeat vessels.

COMMONWEALTH OF AUSTRALIA.

CRUISER.

Adelaide.



Length, 462½ ft. ; 5,100 tons ; Speed, 25½ knots.
Armament, 9—6-in. ; 4—8-pr. ; 1—3-in. A.A. ; 8 L. ; 2 submerged 21-in. torpedo tubes.
Forward funnel removed and superstructure modified.

GREAT BRITAIN.

CRUISERS.

"Ceres" Class.

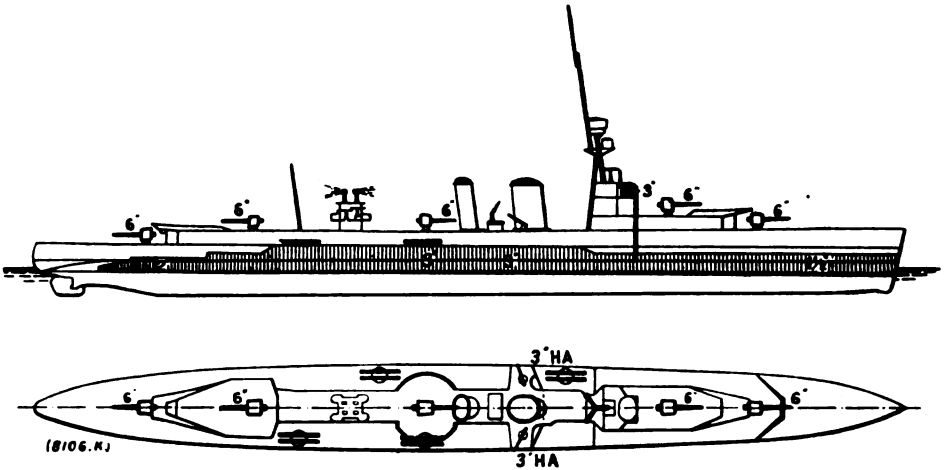
Ceres.

Curacao.

Cardiff

"Carlisle" Class.

Carlisle.



Length (extreme), 450 ft.-451 ft. 9 ins. ; Length B.P., 425 ft. ; 4,200-4,290 tons ; Speed, 29 knots ; Completed, 1917-22.

Armament, 5-6-in. ; 2-3-in. A.A. ; 4-2-pr. ; 2-2-pr. Pom Poms ; 4 above-water 21-in. D.R. torpedo tubes.
Cardiff, Curacao, and Ceres have 2-3-pr.

Carlisle has a trawler bow.

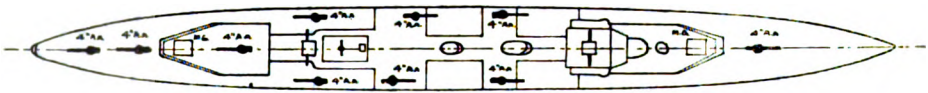
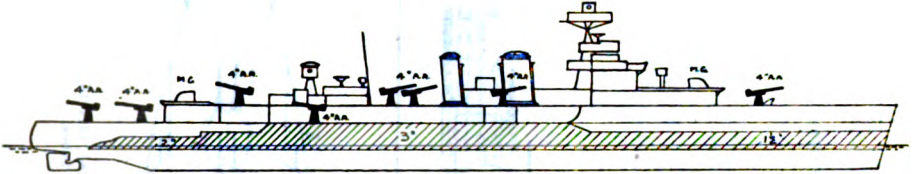
GREAT BRITAIN.

CRUISERS.

"Ceres" Class.

Capetown and Colombo when completed.

Anti-Aircraft gun ships.



Length (extreme), 450 ft. ; 4,290 tons ; Speed, 29 knots ; Completed, 1917.

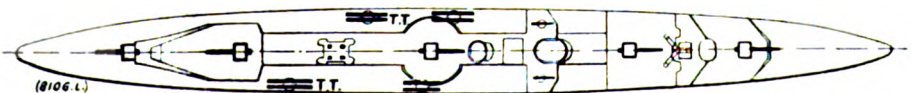
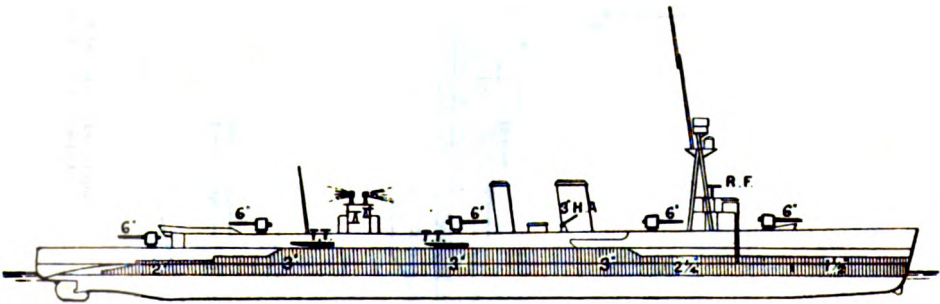
Armament, 10—4-in. A.A. ; 2—3-pr. ; 2 multi-machine guns ; 2 M.G. ; 8 L. ; 8—21-in. torpedo tubes.

CRUISERS,

"Caledon" Class.

Caledon.

Caradoc.



Length (extreme), 450 ft. ; Length B.P., 425 ft. ; 4,180 tons ; Speed, 29 knots ; Completed, 1917.

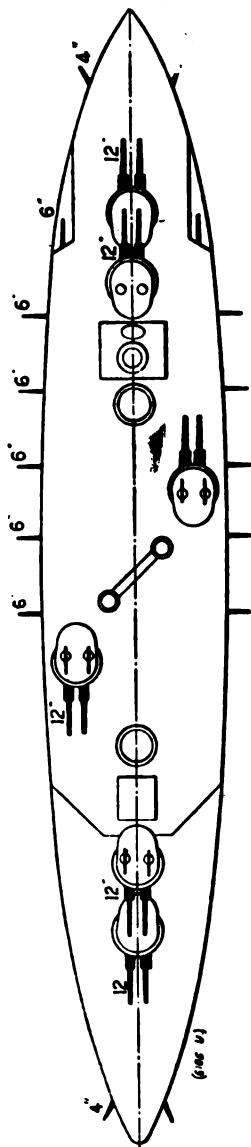
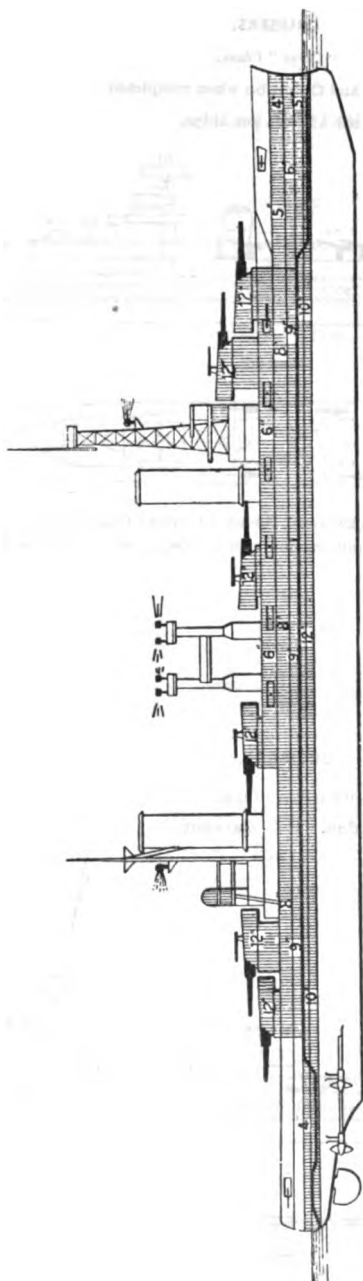
Armament, 5—6-in. ; 2—3-in. A.A. ; 4—3-pr. ; 2—2-pr. Pom Poms ; 2 M. ; 8 L. ; and 4 above-water 21-in. D.R. torpedo tubes
Mainmast lengthened.

ARGENTINA.

BATTLESHIPS

Moreno.

Rivadavia.



Length (extreme), 585 ft. ; Length on W. L., 578 ft. ; 27,940 tons ; Speed, 23½ knots ; Completed, 1914-15.
 Armament, 12-12-in. ; 4-8-in. A.A. ; 6 M. ; 4 L. ; 8 submerged 21-in. torpedo tubes.

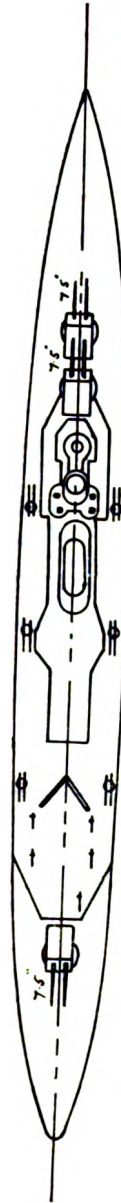
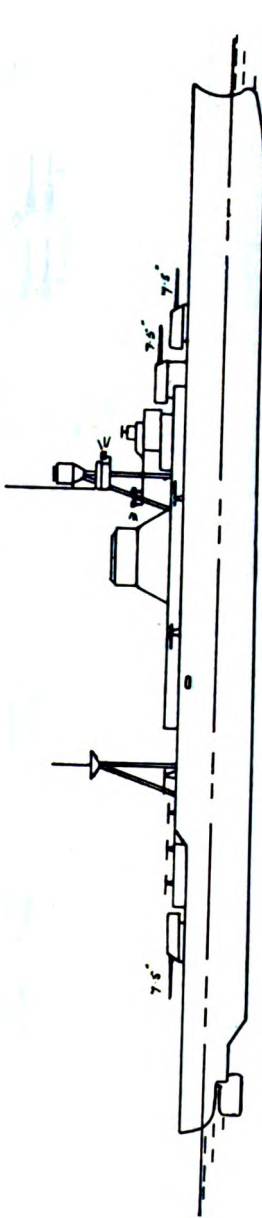
Guns on B and X turrets replaced by rangefinders.

ARGENTINA.

CRUISERS.

Almirante Brown.

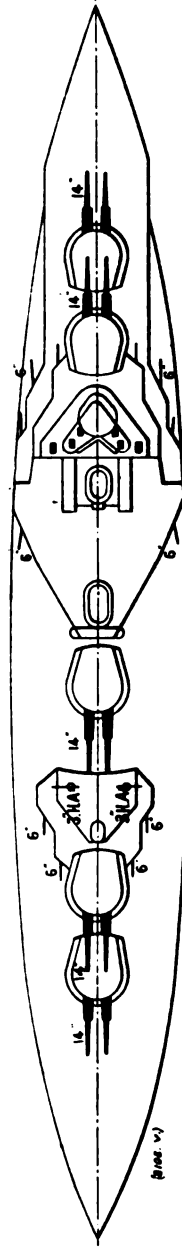
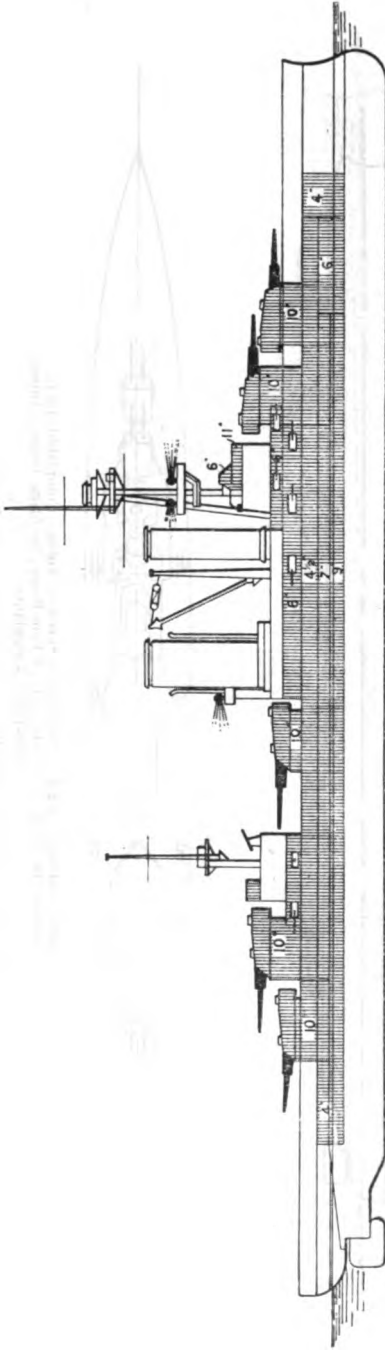
Vintcinco de Mayo.



Length (extreme), 548½ ft.; 5,486 tons; Speed, 32 knots. Completed, 1931.
 Armament, 6—7.6-in.; 12—4-in. A.A.; 6 Pom Poms; 6—21-in. torpedo tubes
 1 catapult; 2 seaplanes.

Corrections to plan.—Fore topmast shortened. Main topmast lengthened. Derrick fitted on fore side of mainmast.
 Searchlight fitted on mainmast. Superstructure built aft side of mainmast.

CHILE.
BATTLESHIP.
Almirante Latorre (*formerly* H.M.S. Canada).



Length (extreme), 661 ft. ; Standard Displacement, 23,960 tons ; Speed, 28 knots ; Completed, 1916 ; Modernised at Devonport Dockyard, 1928-31.*
Armament, 10-14-in. ; 14-6-in. ; 4-3-pr. ; 4 submerged 21-in. torpedo tubes ; 1 catapult.

* During modernisation main topmast has been raised and bridge platforms extended

Four 4-in. A.A. have been added.

Catapult fitted on quarter deck.

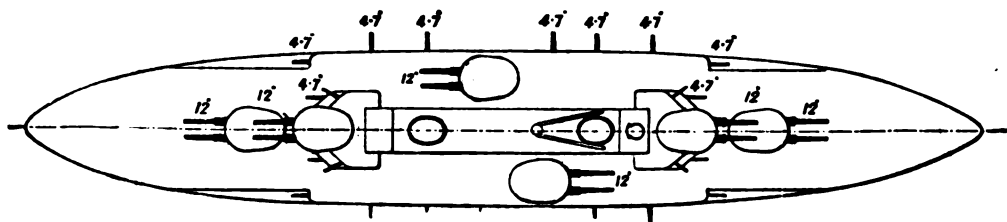
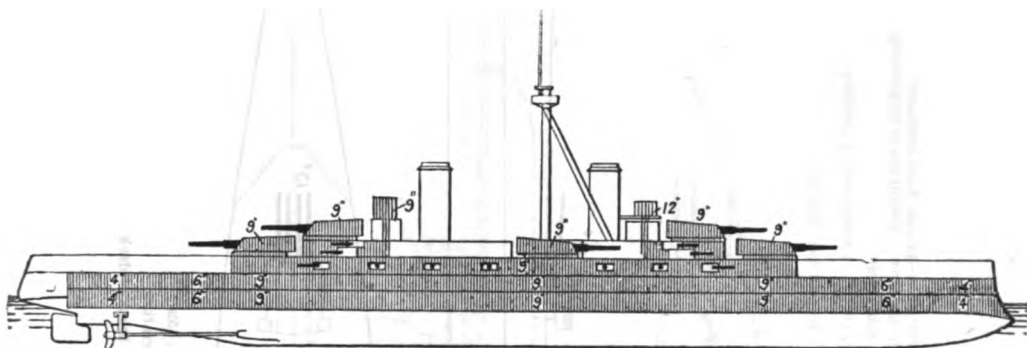
(P51)

BRAZIL.

BATTLESHIPS.

Minas Geraes.

São Paulo.



Length (extreme), 543 ft. ; Length B.P., 500 ft. ; 19,200 tons ; Speed, 21 knots ; Completed, 1909, 1910.

Armament, 14—12-in. ; 14—4.7-in. ; 2—3-pr. ; 4—3-in. A.A. ; 8 M. A.A.

Overhauled and refitted at Brooklyn Navy Yard, 1921-23, and A.A. guns installed.

Corrections to plan.—Ten main deck 4.7-in. guns removed in 1931.

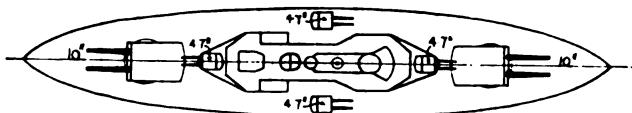
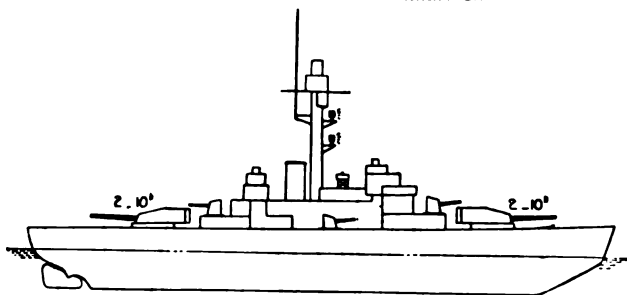
Forward funnel removed, bridgework modified ; 4.7-in. guns and 3-in. A.A. guns added.
Polemast and rangefinder fitted abaft funnel.

FINLAND.

ARMoured GUNBOATS.

Väinämöinen.

Ilmarinen

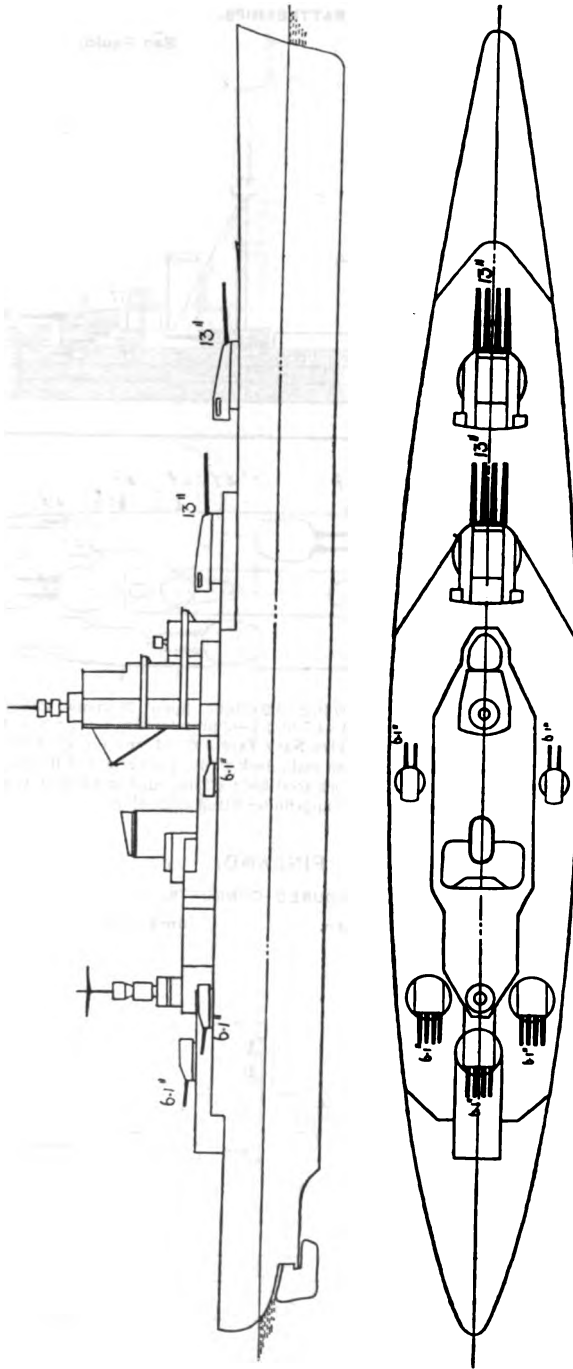


Length, 305 ft. ; 3,900 tons ; Speed, 15 knots.

Armament, 4—10-in. ; 8—4-in.

Completed, 1902-03.

FRANCE.
BATTLESHIP8.
Dunkerque. Straasbourg



Length, 706 ft.; 28,500 tons; Speed, about 29 knots. Completed, 1936.

Armament, 8-13-in.; 16-5'1-in., 40 smaller; 1 catapult; 4 aircraft.

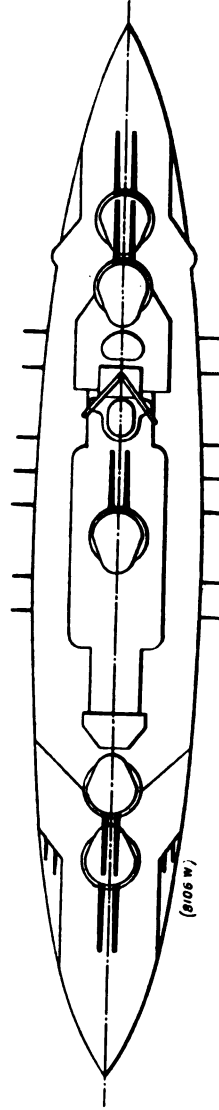
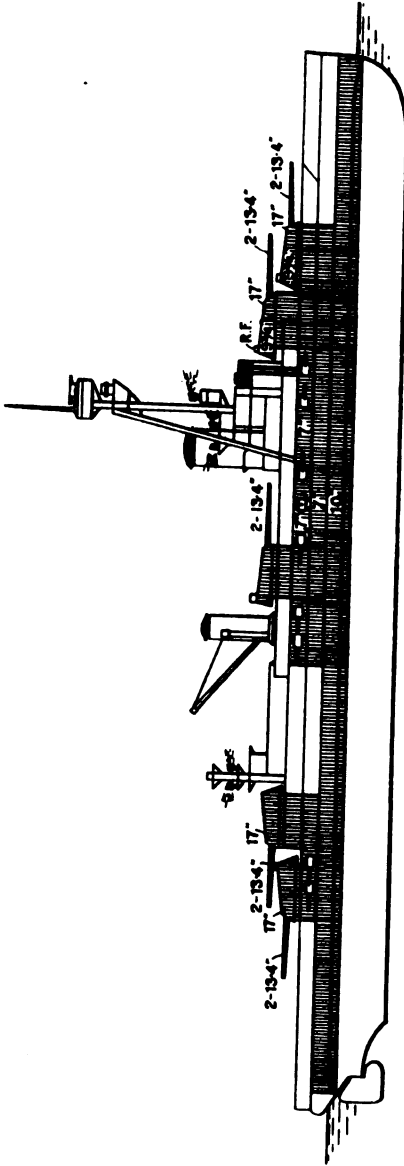
Catapult fitted on quarter deck at M.L., and crane fitted on port side at break of deck.

FRANCE.

BATTLESHIPS.

Lorraine.

Provence.



Length (extreme), 544 ft. 6 ins. ; 22,180 tons ; Speed, 21 knots ; Completed, 1915-16 ; Modernised, 1925-27.
 Converted to oil burning, 1931.

Armament, 10-13-4-in. ; 14-6-4-in. ; 8-3-in. A.A. ; 8-3-pr. ; 2-1-pr. ; 4 submerged 18-in. torpedo tubes. 4 seaplanes. 1 catapult.
 Correction to plan.—The ships have now tall main topmasts and no fore topmasts.

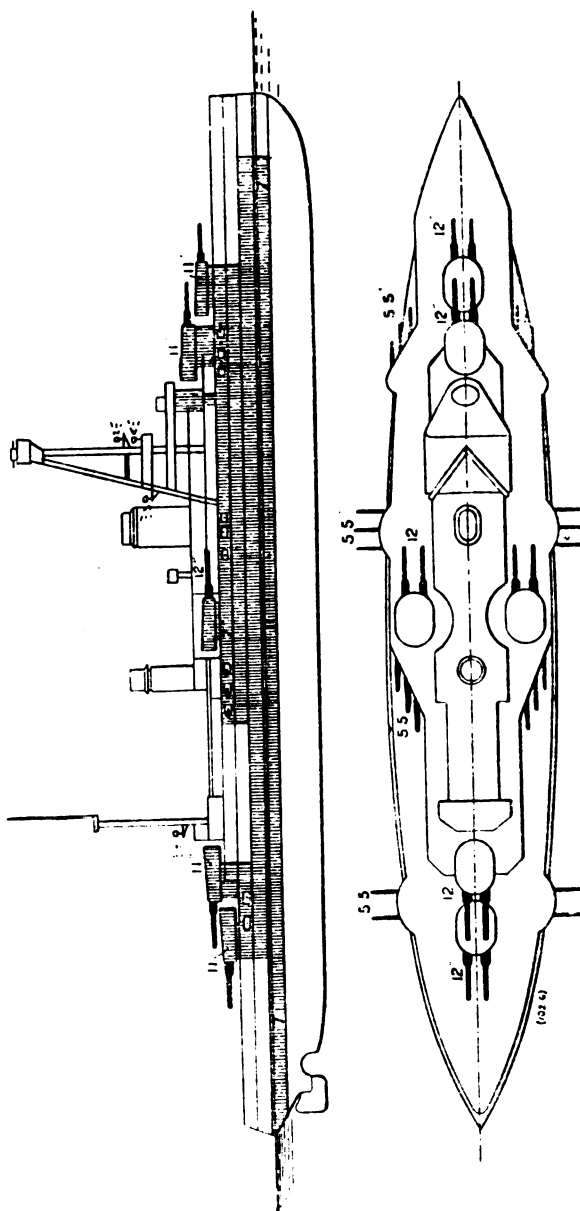
NOTE.—Lorraine has been reconstructed. The midships turret has been removed and a hangar fitted in its place. Machinery is modernised and speed increased. Improved protection is fitted. 8-39-in. A.A. fitted in lieu of 3-in. A.A.'s. 2-13-4-in. guns removed. Cranes fitted abreast funnel. Bridgework extended.

FRANCE.

BATTLESHIPS.

Courbet.

Paris.



Length (extreme), 551 ft. ; Length B.P., 541 ft. 4 ins. ; 22 180 tons ; Speed, 30 knots ; Completed, 1913-14. Modernized in 1922. Converted to oil burning, 1931.

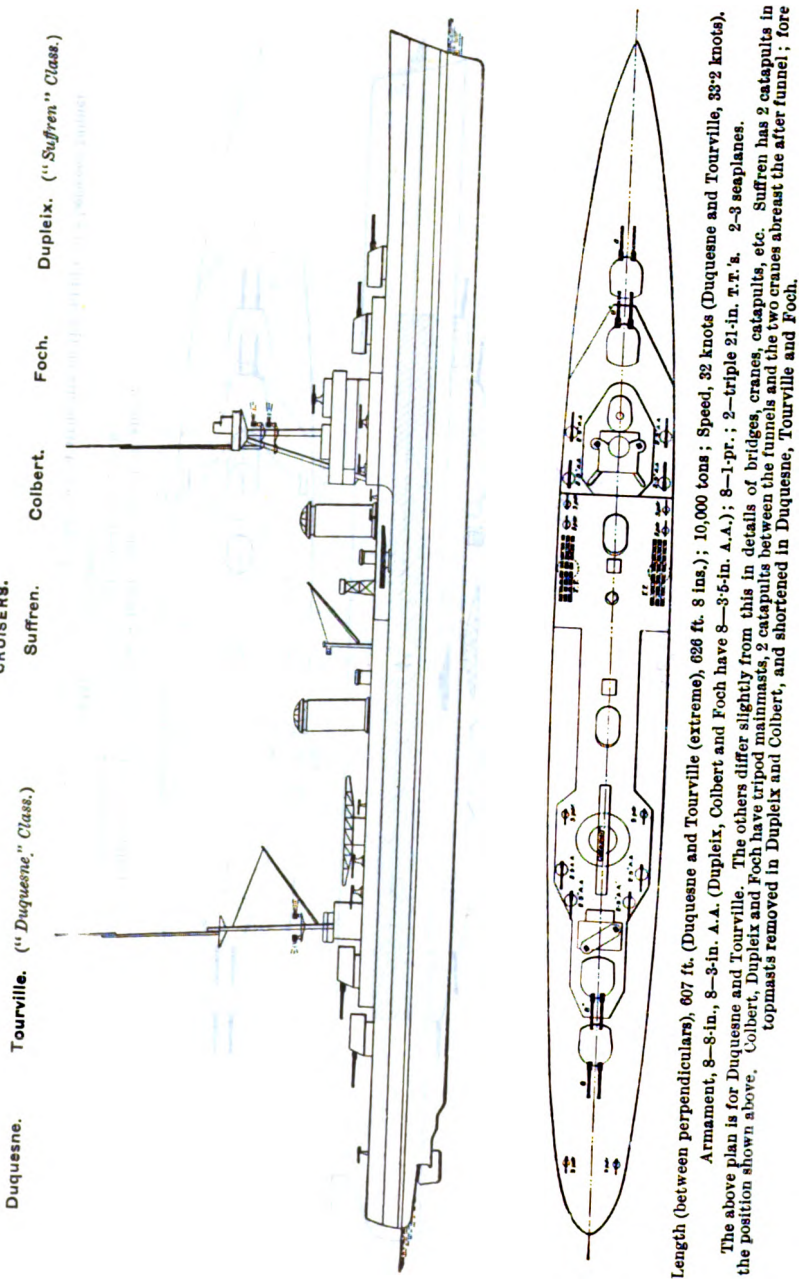
Armament, 12-12-in. ; 22-5-4-in. ; 7-3-in. A.A. ; 2-3-pr. ; 2-1-pr. ; 4 submerged 18-in. torpedo tubes.

Corrections to plan.—Guns fitted abreast after funnel. After funnel reduced in height. Range-finder fitted on B turret.

Courbet and Paris are under the control of the Free French.

FRANCE.

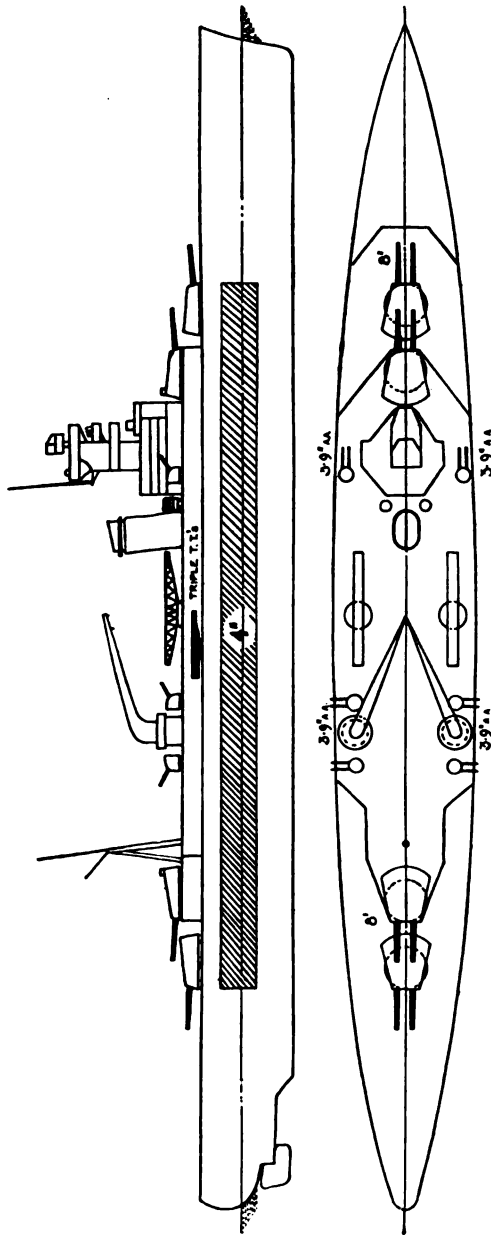
CRUISERS.



FRANCE.

CRUISER.

Algérie.



Length (extreme), 610 ft. 3 in.; 10,000 tons; Speed, 31 knots.

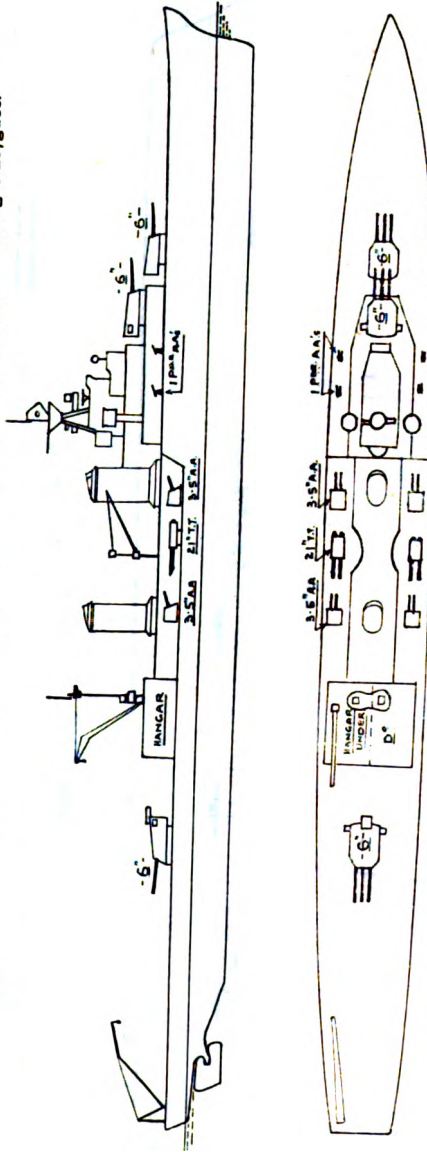
Armament, 8—8-in.; 12—3.9-in. A.A.; 8—1.5-in.; 16 M.

1 catapult; 2 seaplanes.

Correction to plan.—The aircraft cranes are not sided as shown, but lie fore and aft from a structure on the middle line between funnel and mainmast.

Superstructure amidships modified and two cranes fitted.

FRANCE.
 CRUISERS.
 Jean-de-Vienne. La Galissonnière. Gloire. Montcalm. Georges Leygues.



Length (extreme), 589 ft. ; 7,600 tons ; Completed, 1935-37 ; Speed, 31 knots.
 Armament, 9—6-in. ; 8—3.5-in. A.A. ; 8—5 in. A.A. ; 4—21.7-in. torpedo tubes ; 4 seaplanes ; 1 catapult.
 Fitted with Hein landing canvas at the stern.
 Catapult fitted on after turret.

FRANCE.

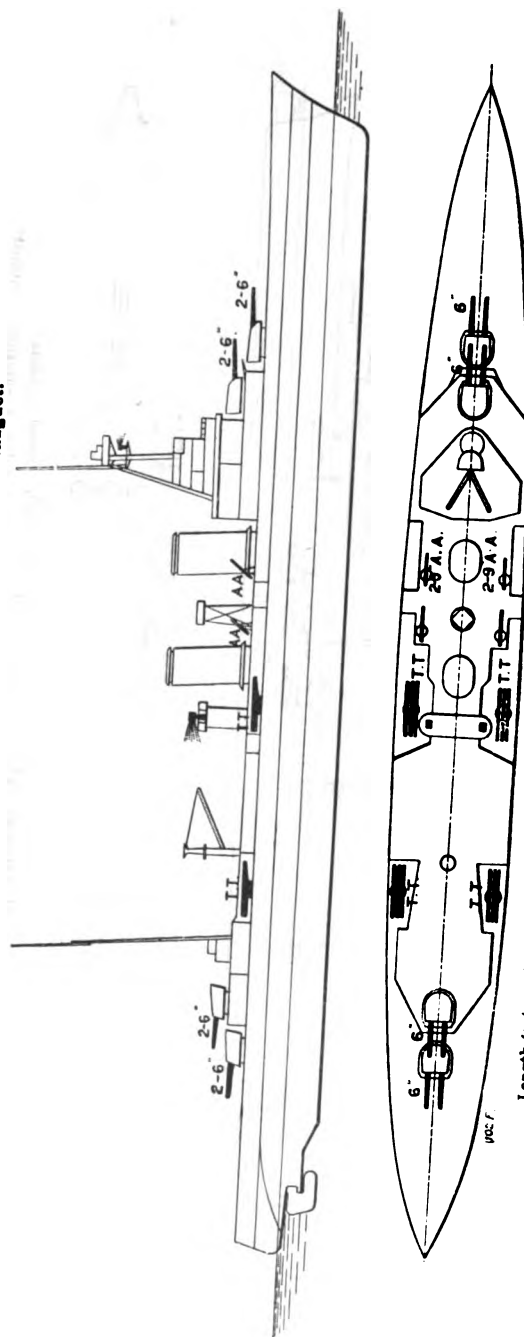
CRUISERS.

"Digway-Trouin" Class.

La Motte Picquet.

Duguay-Trouin.

Primauguet.

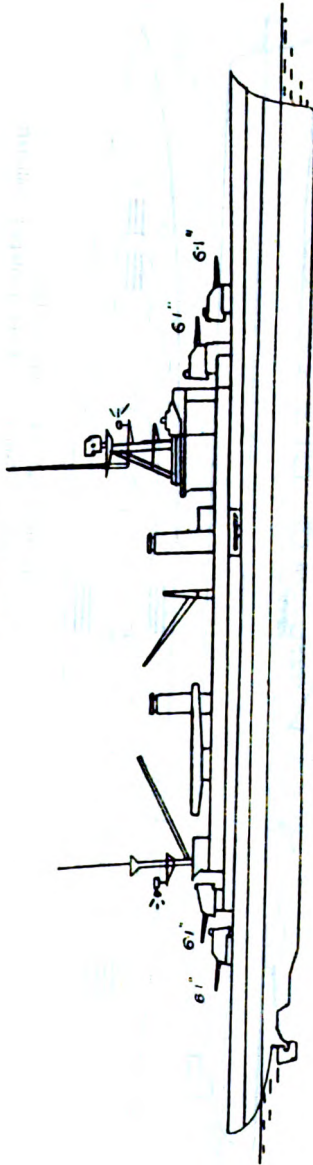


Length (extreme), 564 ft. 10 ins.; Length B.P., 575 ft.; 7,240 tons; Speed, 34 knots. Completed, 1926-27.

Armament, 8-6.1-in.; 4-3-in. A.A.; 2-3-pr.; 4 M.; 1 L.; 4 triple torpedo tubes (21.7-in. torpedoes); 1 catapult; 1 seaplane.

NOTE.—Reported to have protection to meet

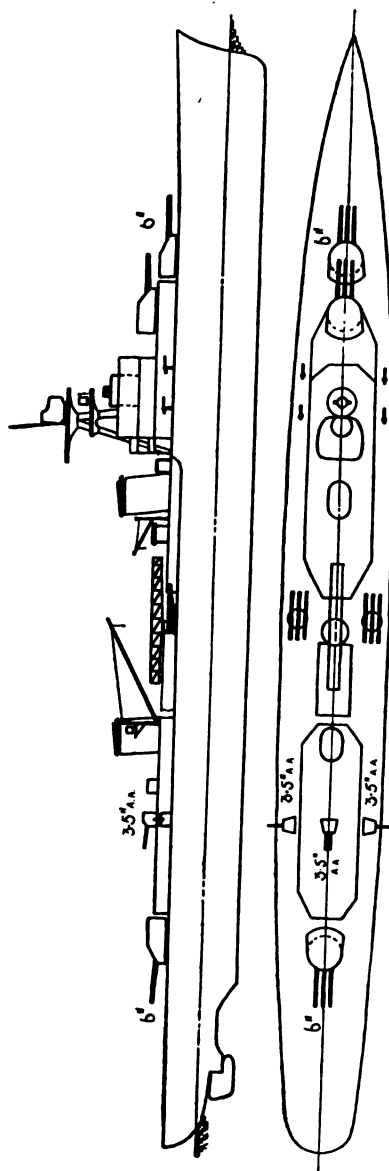
FRANCE.
TRAINING CRUISER.
Jeanne d'Arc.



Length (extreme), 567 ft. 8 ins. ; 6,496 tons ; Speed, 26 knots ; Completed, 1931.
Armament, 8—6.1-in. ; 4—3-in. A.A. ; 2—1.5-in. ; 2 M. ; 2—21.7-in. torpedo tubes ;
2 seaplanes.

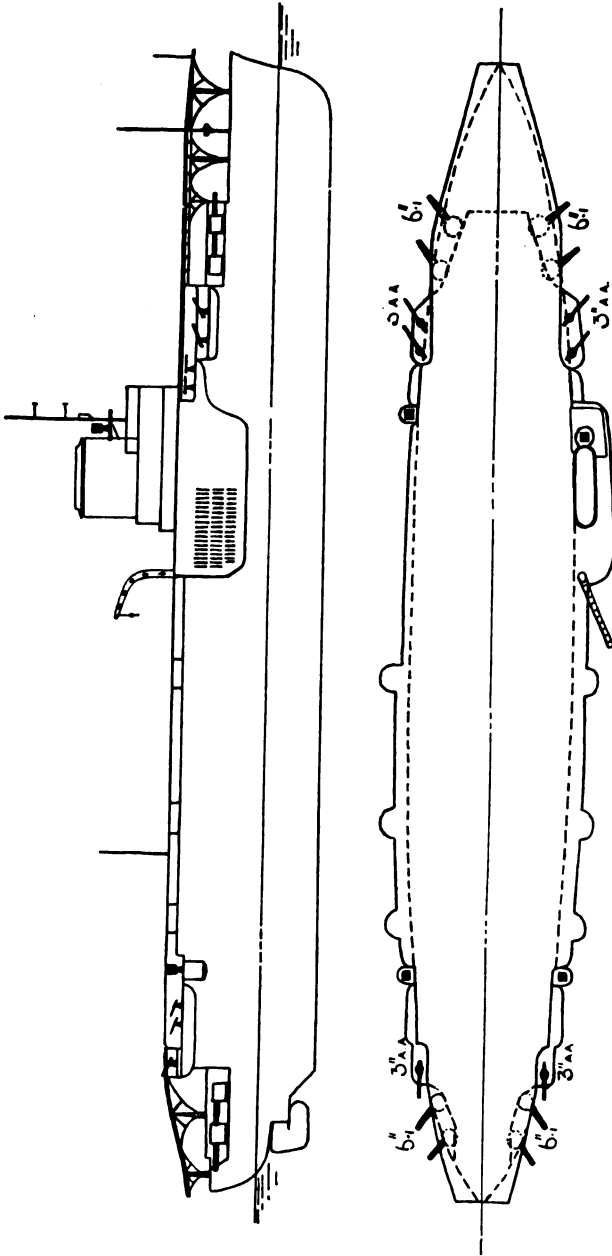
Correction to plan.—The catapults and fore topmast have been removed.

FRANCE.
CRUISER MINELAYER.
Emilé Bertin.



Length (extreme), 580 ft. 9 ins.; 5,888 tons; Speed, 34 knots. Completed, 1904.
Armament, 9-6-in.; 4-8-6-in. A.A.; 4-1-5 A.A.; 8 M.; 200 mines; 6-21-7-in. torpedo tubes; 1 catapult; 2 aircraft.
Correction to plan.—Small pole mast fitted on fore side of after turret.

FRANCE.
AIRCRAFT CARRIER.
Béarn.

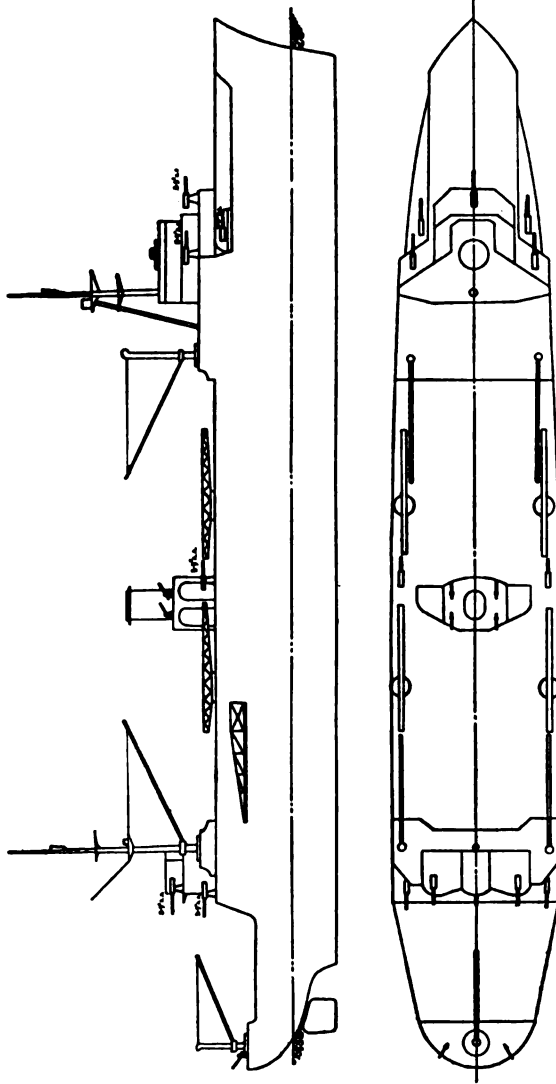


Length (extreme), 599 ft. ; 22,146 tons ; Speed, 21.5 knots ; Completed, 1923.

Armament, 8—6.1-in. ; 6—3 in. A.A. ; 8—1-pr. A.A. ; 12 M. A.A. ; 4—21.7-in. torpedo tubes ; 41 planes."

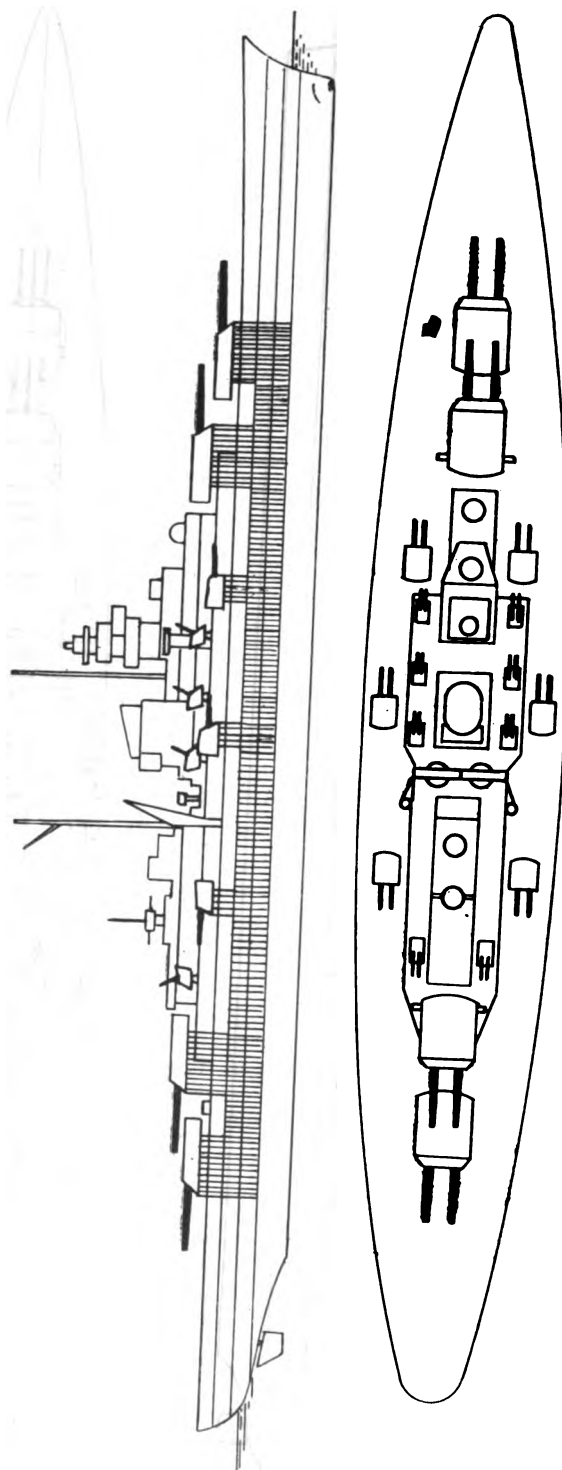
Correction to plan. —Space between flight deck forward and upper deck partially blanked off. Framework fitted to after-side of funnel.

FRANCE.
AVIATION TRANSPORT.
Commandant Teste.



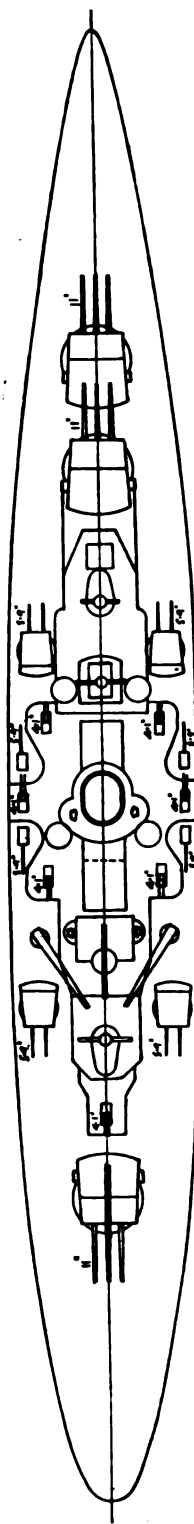
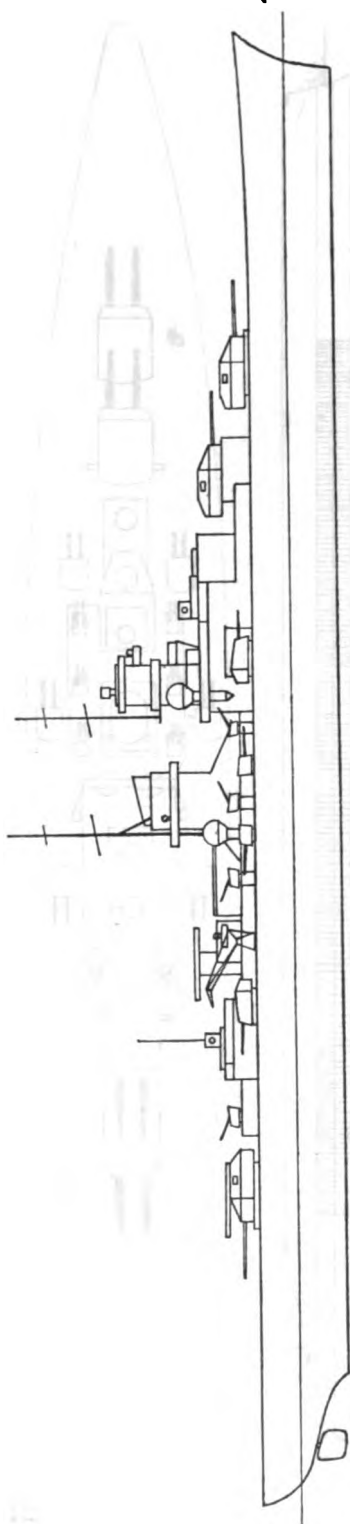
Length (extreme), 548 ft. ; 10,000 tons ; Speed, 20½ knots ; Completed, 1932
Armament, 12 -3·9-in. A.A. ; 8-8-pr. A.A. ; 12 M. ; 10 planes.

GERMANY.
BATTLESHIP.
Tirpitz.



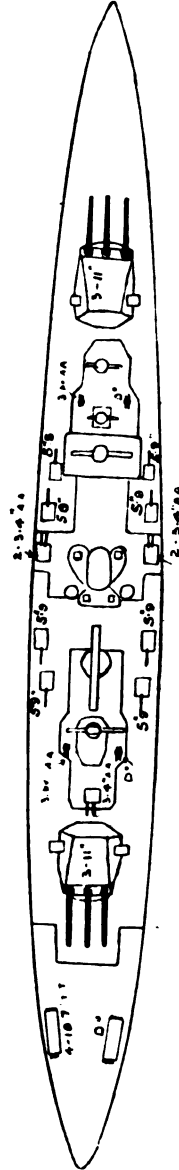
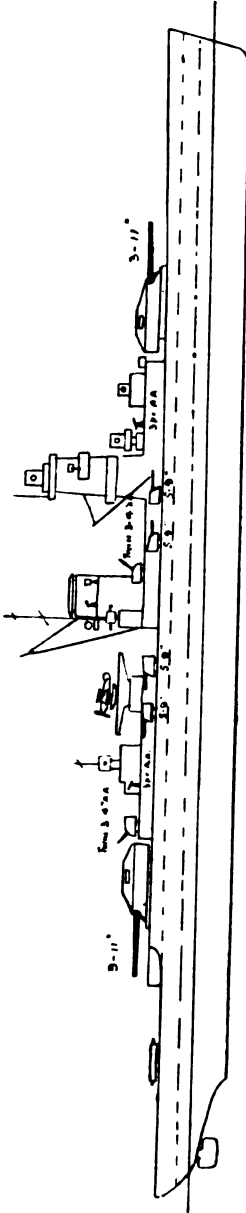
Length (on W.L.), 792 ft. 6 ins. ; 40,000 tons ; speed about 28 knots ; completed 1941.
Armament, 8—15 in. ; 12—5.9 in. ; 16—4.1 in. A.A. ; 4 seaplanes ; 2 catapults.

GERMANY.
BATTLE CRUISERS.
Scharnhorst. Gneisenau.



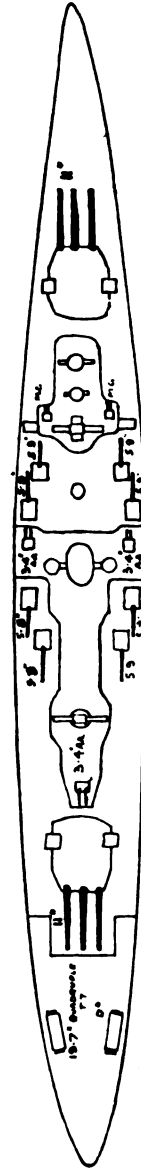
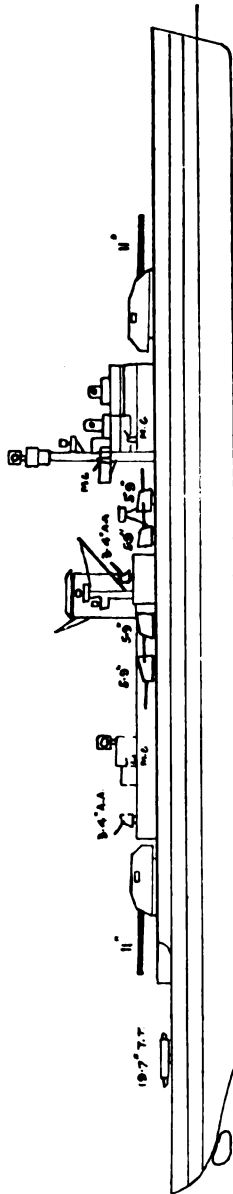
Length (extreme), 741 ft. 6 ins.; 26,000 tons; 27 knots; Completed 1939-39.
Armament, 9—11-in.; 12—5.9-in (4 twin turrets, 4 single mountings); 14—4.1-in. A.A.; 16—1.5-in. A.A.; 4 aircraft; 2 catapults.

GERMANY.
ARMoured SHIP,
Admiral Scheer.



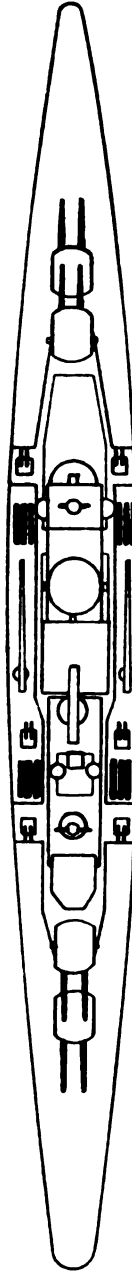
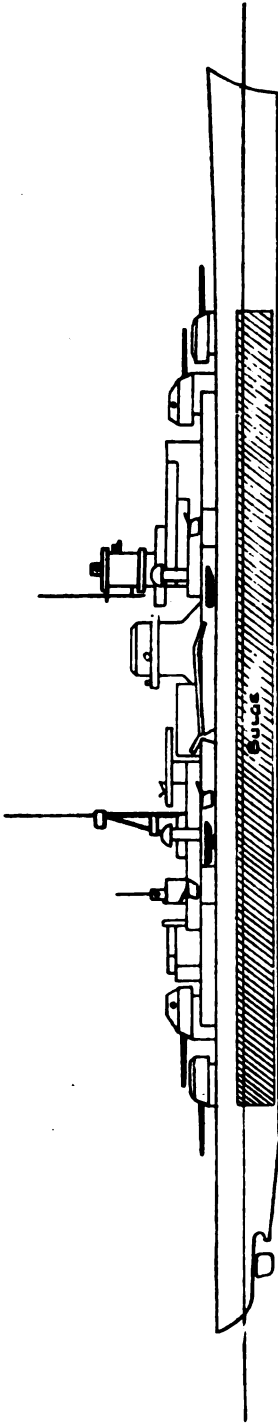
Length (extreme), 600 ft. 3 ins. ; Standard displacement, 10,000 tons ; Speed, 26 knots.
Armament, 6-11-in. ; 8-6-2-in. ; 0-4-1-in. A.A. ; 8-1-5-in. A.A. ; 10 M.G. ; 8-21-in. torpedo tubes ; 1 catapult ; 2 aircraft.
Completed, 1924.

GERMANY.
ARMoured SHIP.
Lutzow (ex-Deutschland.)



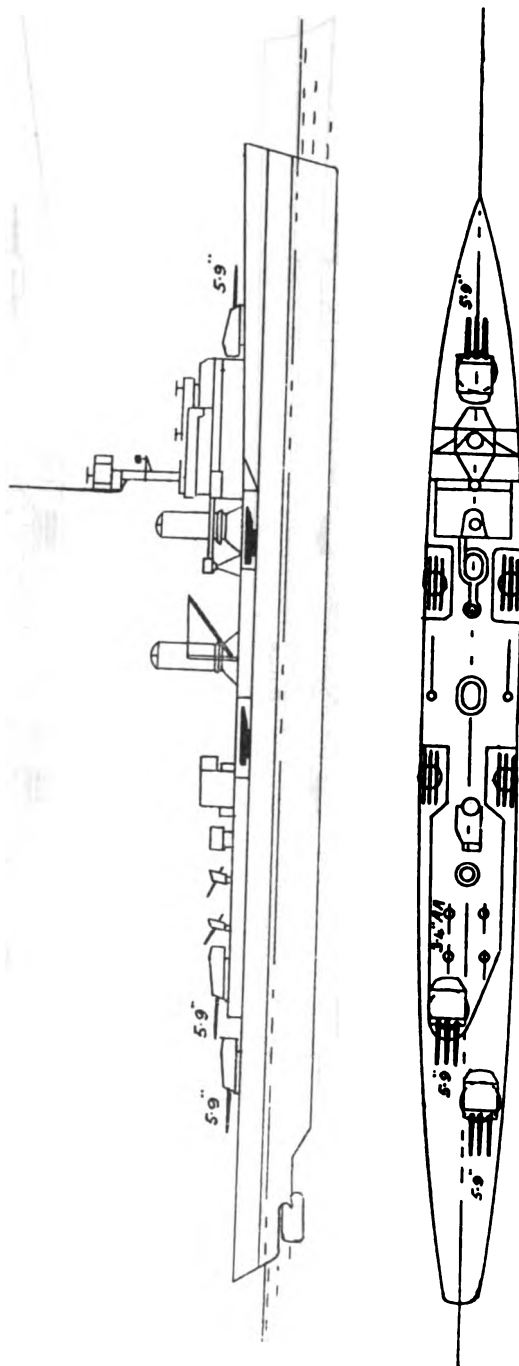
Length (extreme), 609 ft. 3 in. ; Standard displacement, 10,000 tons ; Speed, 26 knots ; Completed, 1933.
Armament, 6-11-in. ; 8-6-9-in. ; 6-4-1-in. A.A. ; 8-4-1-in. A.A. ; 10 M.G. ; 8-21-in. torpedo tubes ; 1 catapult ; 2 aircraft.
Pole mainmast fitted on aft side of funnel. Catapult fitted abaft funnel. Fore topmast fitted.
Pole mast fitted on after superstructure. Cranes fitted in lieu of derricks on port side of funnel.

GERMANY.
CRUISER.
Admiral Hipper.



Length (on W.L.), 639 ft. 9 ins.; Standard displacement, 10,000 tons; Speed, 33 knots; Completed, 1939.
Armament, 8-8 in.; 12-4'1 in. A.A.; 12-1'45 A.A.; 12-21-in. torpedo tubes; 1 catapult; 3 aircraft.
Stem is upright.

GERMANY.
LIGHT CRUISER.
Köln.

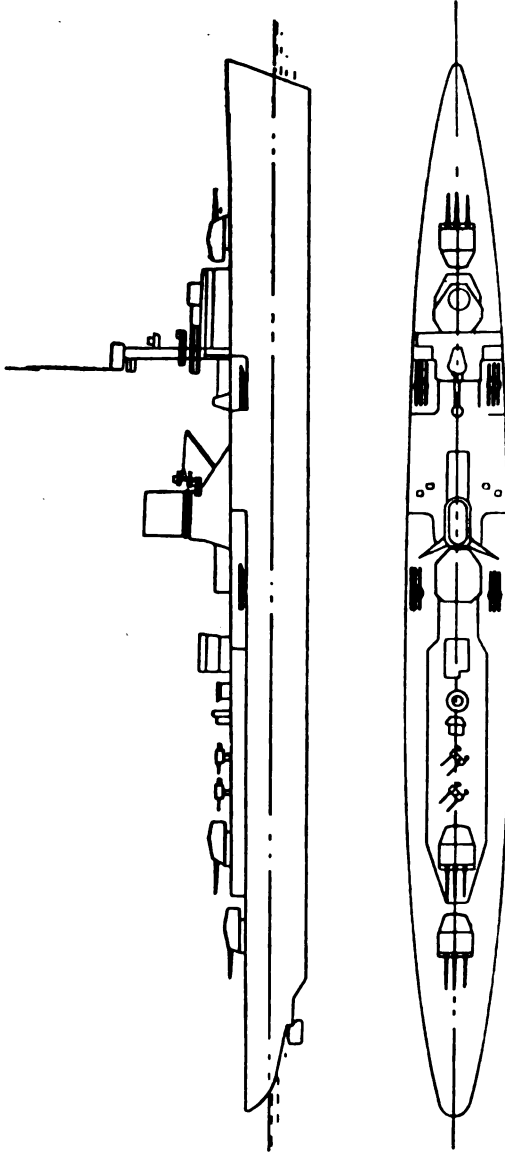


Length (extreme), 570 ft. 10 ins. ; 6,000 tons ; Speed, 33 knots ; Completed, 1922-30.

Armament, 9-6.9-in. ; 4-3.5-in. A.A. ; 4 triple 21-in. torpedo tubes ; 1 catapult ; 2 aircraft.

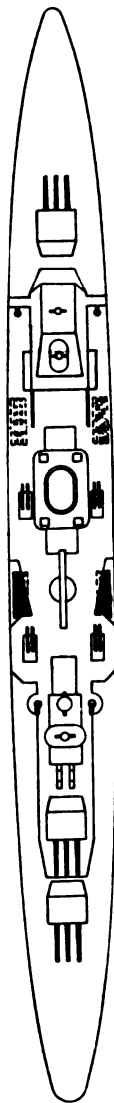
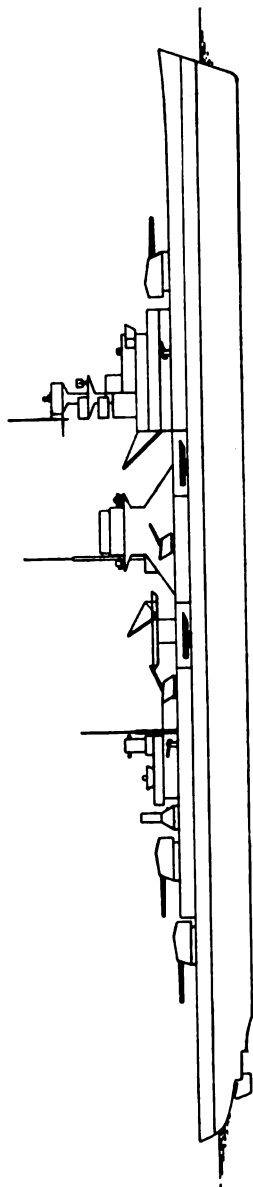
Pole mainmast fitted on aft side of after funnel. Catapult fitted between funnels. Crane fitted in lieu of derrick on port side.

GERMANY,
LIGHT CRUISER,
Leipzig.



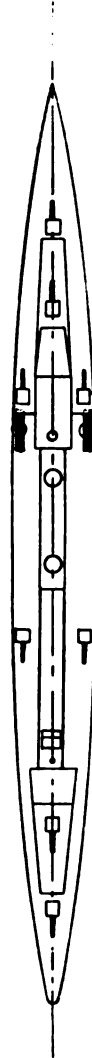
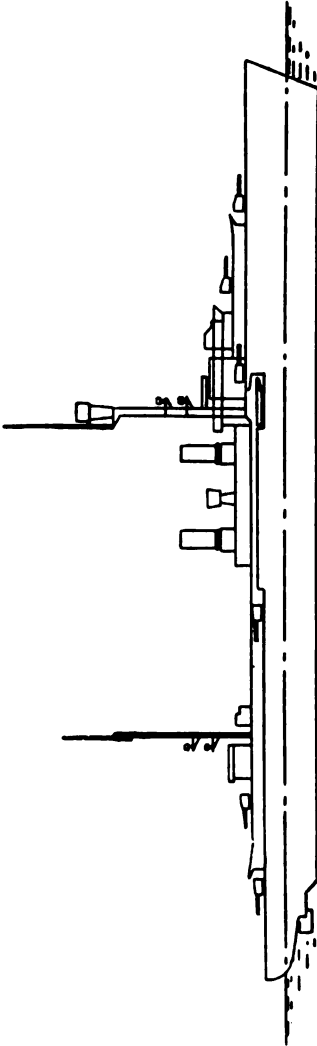
Length (extreme), 531 ft.; Length W.L., 543 ft. 10 ins.; 5,000 tons; Speed, 32 knots; Completed, 1931.
Armament, 9—5.9-in.; 8—3.9-in. A.A.; 8—1.6-in. A.A.; 4 triple 21-in. torpedo tubes; 1 catapult; 2 aircraft.
Corrections to plan.—Pole mainmast fitted on aft side of funnel. Catapult fitted between funnel and foremast.
The derrick is fitted on the starboard side. A crane is fitted on port side nearest funnel. Fore topmast shortened.

GERMANY.
LIGHT CRUISER.
Nurnberg.



Length (on W.L.), 557 ft. 9 ins. ; 6,000 tons ; Speed, 32 knots ; Completed, 1935.
Armament, 9—5.9-in. 8—3.5-in. H.A. 8—1.5-in. A.A. 12—21-in. torpedo tubes ; 1 catapult ; 2 seaplanes.

GERMANY.
LIGHT CRUISER.
Emden.

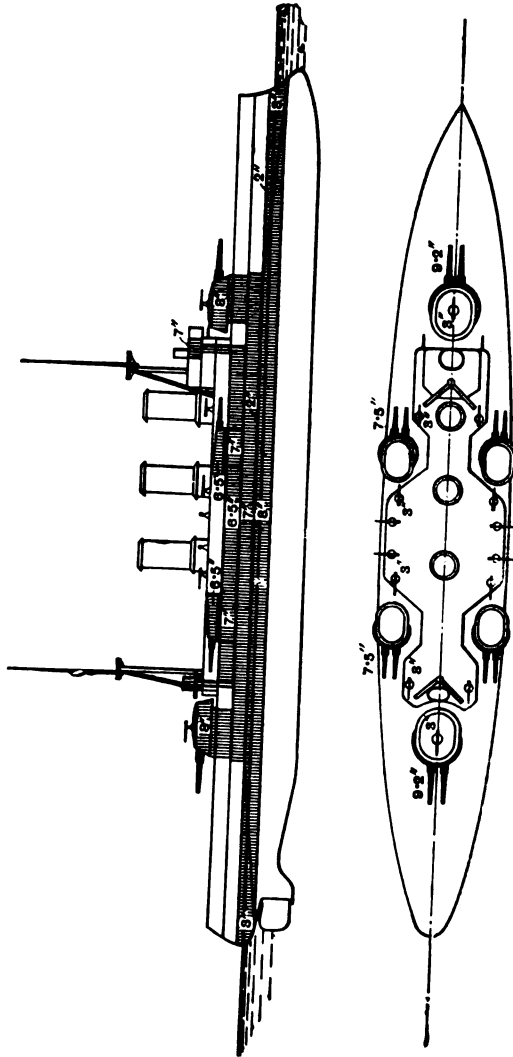


Length (extreme), 510 ft. 2 in.; 5,400 tons; Speed, 29 knots; Completed, 1923.
Armament, 8—6-in.; 2—8-in. A.A.; 4 M.C.; 4—157-in. torpedoes in twin mountings.
The 6-in. guns are in twin mountings, 2 forward and 2 aft.
Corrections to plan.—Fore topmast shortened. Fore mast fitted to aft side of funnel.
Superstructure added before mainmast. Mainmast shortened and surmounted by a searchlight platform.

GREECE.

ARMoured CRUISER.

Giorgios Averoff.



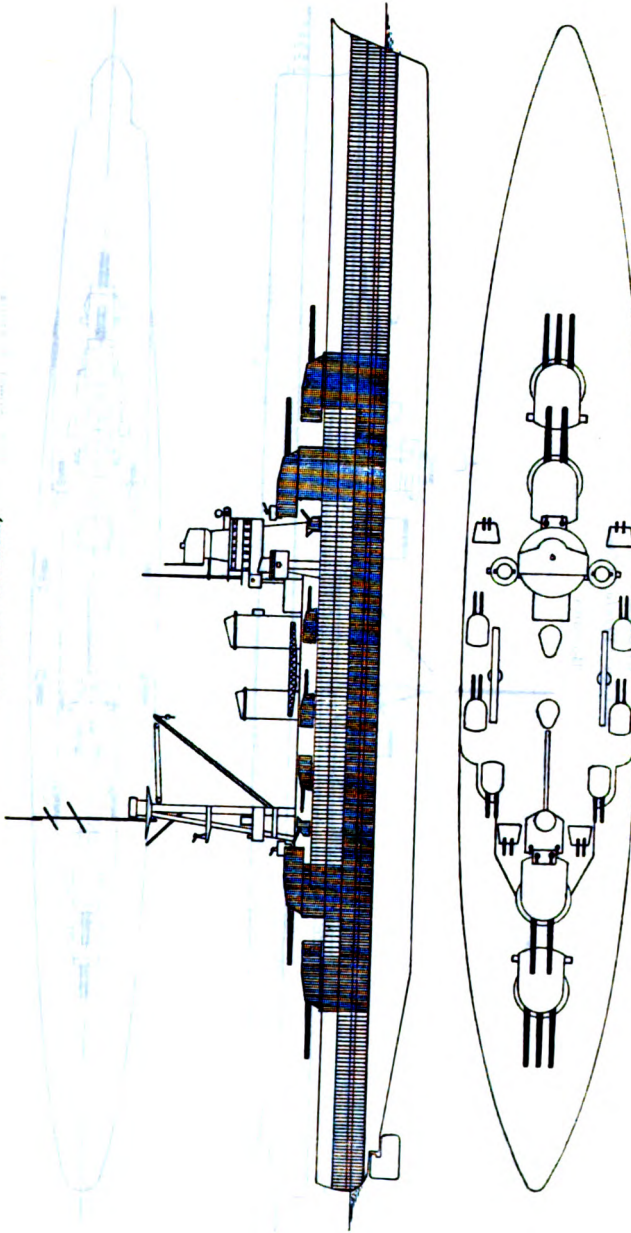
Length, 462 ft.; 9,801 tons; Speed, 22.5 knots; Completed, 1911. Refitted, 1927.

Armament, 4—9-in.; 8—7.5-in.; 16—3-in. A.A.; 4—3-in. A.A.; 4—8-pr.; 2 M.; 8 submerged 18-in. torpedo tubes.
Correction to plan.—Bridgework modified. Control top fitted on foremast. Searchlight and derrick fitted to mainmast.

ITALY.

BATTLESHIPS.

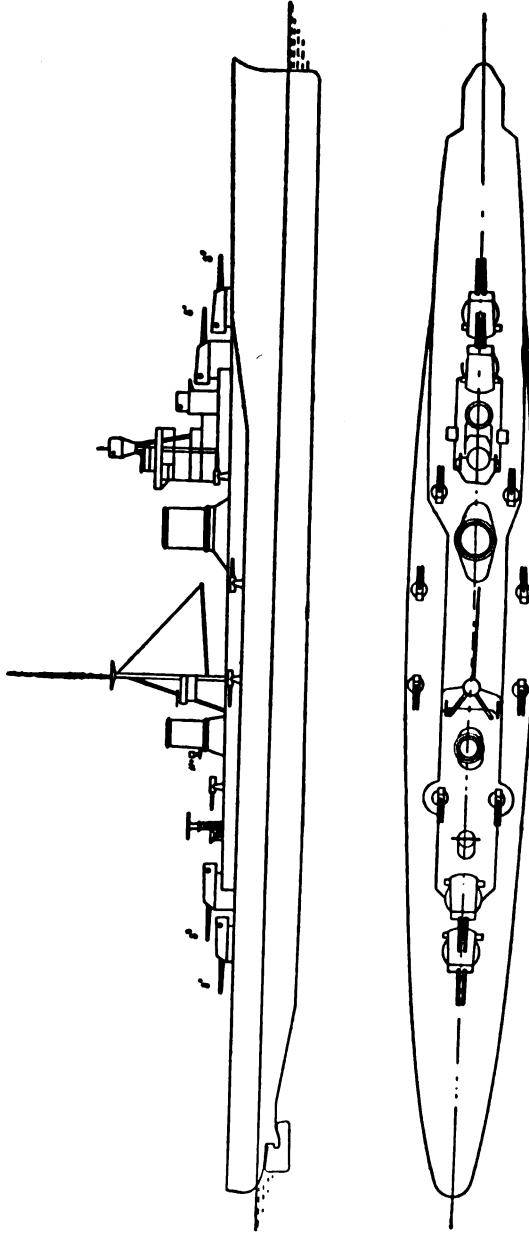
Conte di Cavour.	Giulio Cesare.	Andrea Doria.	Caio Duilio.
	(After modernisation.)		



Length (extreme), 611 ft. 6 ins.; 23,632 tons; 27 knots; Completed, 1914-15; Modernised, 1937.

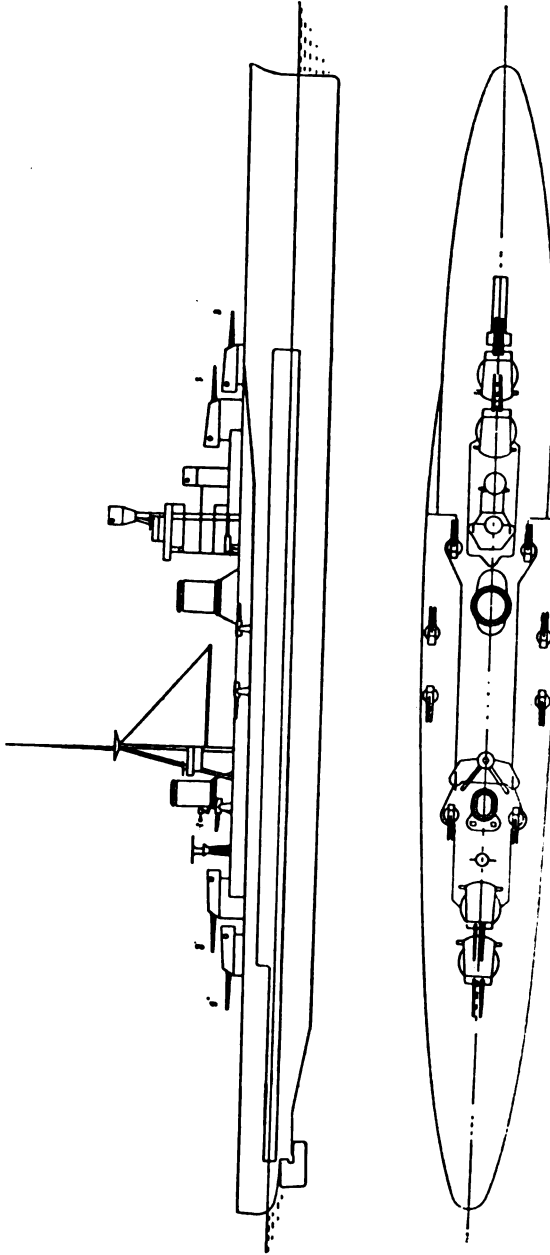
Armament { 10-12-in. ; 12-4-7-in. A.A. ; 8-3-9-in. A.A. ; 36 A.A. M.G. ; 1 aircraft ; 2 catapults in Cavour and Cesare.
 { 10-12-6-in. ; 12-6-3 in. ; 10-3-5 in. A.A. ; 39 A.A. M.G. ; 1 aircraft ; 1 catapult in Doria and Duilio.
 Tripod mainmast removed in Doria.

ITALY.
CRUISER.
Modified "Trento," Class.
Bolzano.



Length (extreme), 646 ft. 3 in.; 10,000 tons; Completed, 1932; Speed, 35 knots.
Armament, 8—8-in. A.A.; 12—3-6-in. A.A.; 8—1-5 M. A.A.; 6—5 M. A.A.; 1 catapult; 2 aircraft; 8—21-in. torpedo tubes.
Corrections to plan.—Forward superstructure faired into funnel. Catapult fitted amidships. Catapult fitted amidships.

ITALY.
CRUISER.
"Zara" Class,
Gorizia.



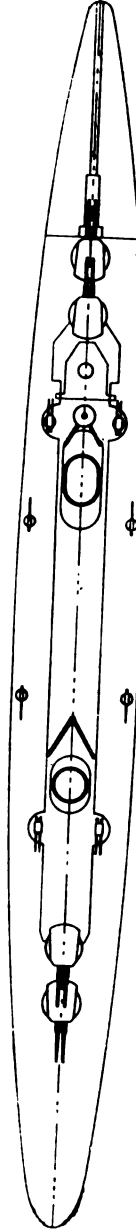
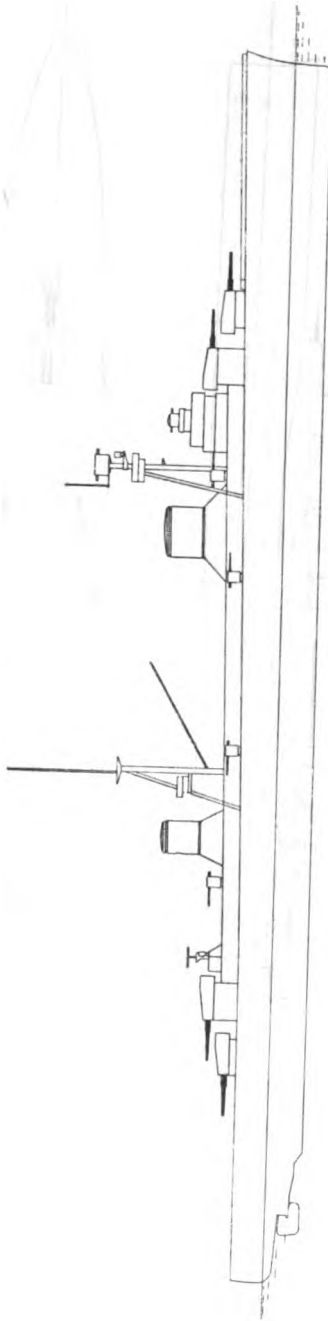
Length (extreme), 689 ft. 9 ins. ; 10,000 tons ; Speed, 32 knots.
Armament, 8—8-in. ; 12—3.9-in. ; 8—1.5-in. A.A. ; 8—5 M.A.A. ; 1 catapult ; 2 aircraft.
Corrections to plan.—Forward superstructure faired into funnel. Clinker screens fitted to funnels.

ITALY.

CRUISER.

"*Trento*" Class.

Trieste.



Length (extreme), 646 ft. ; 10,000 tons ; Speed, 26 knots ; Completed, 1902.

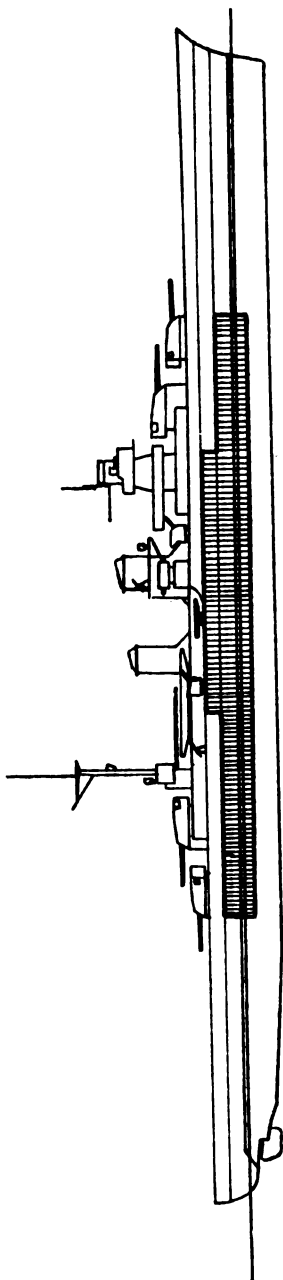
Armament, 8—8-in. ; 12—3.9-in. ; 4—1.57-in. A.A. ; 8—5 A.A. M.G. ; 4 twin torpedo tubes 21-in. ; 1 catapult ; 2 aircraft.

Correction to plan.—The 4-in. guns between the funnels are twin guns. Fore topmast removed. Bridgework extended.

ITALY.

CRUISERS.

Duca Degli Abruzzi. Giuseppe Garibaldi.



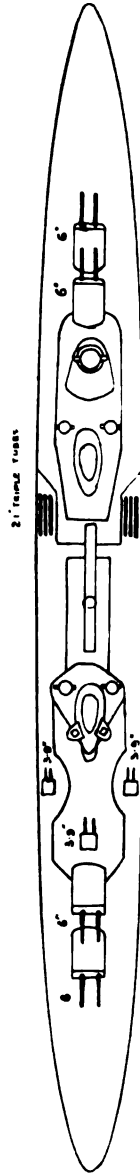
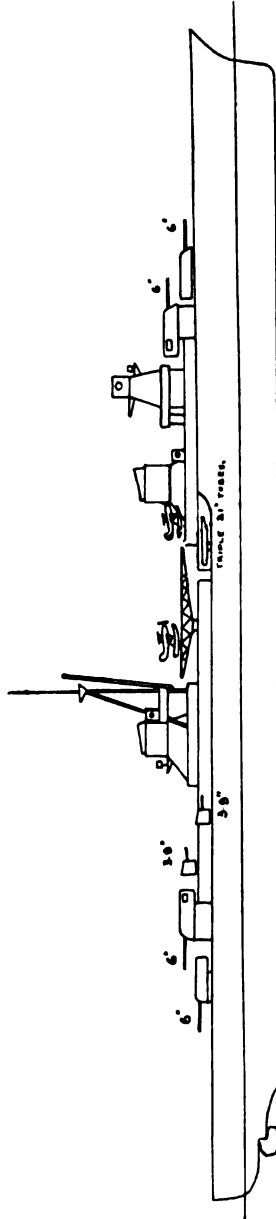
Length (extreme), 618 ft. 9 in.; Standard displacement, 7874 tons; Speed, 35 knots; Completed, 1936.
Armament, 10—6 in.; 8—8.9 in. A.A.; 8—1.5 in. A.A.; 6—21 in. torpedo tubes; 2 catapults; 4 aircraft.

ITALY.
CRUISERS.

"Attentato" Class.

Filliberto Duca d Aosta.

Eugenio di Savoia.



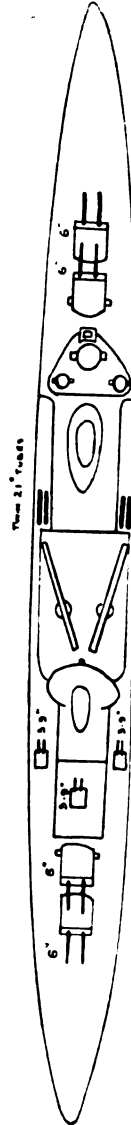
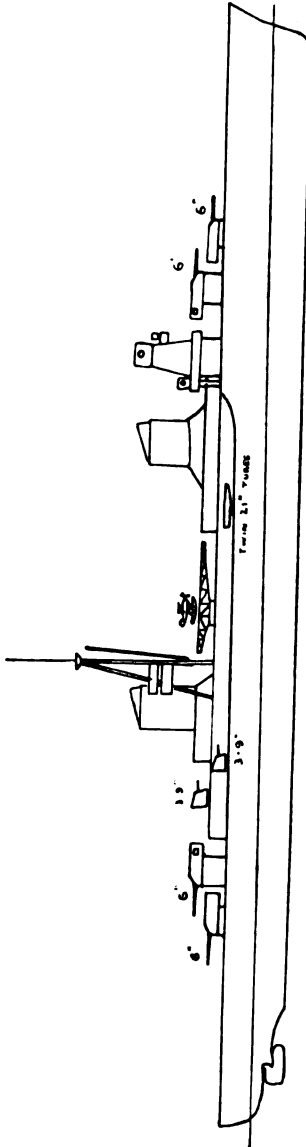
Length (extreme), 610 ft. 3 ins.; 7,228 tons; Speed, 36½ knots.
Armament, 8—6-in.; 6—3.9-in.; 8—1.5-in. A.A.; 8—5-in. A.A.; 2 triple 21-in. torpedo tubes; 1 catapult; 3 aircraft.

ITALY.
CRUISERS.

"Condottieri" Class.

Montacuccoli.

Muzio Attendolo.



Length (extreme), 597 ft. 9 ins.; Speed, 37 knots : Completed, 1935.
Armament, 8-6-in.; 6-8-in. A.A.; 8-1-5-in. A.A.; 8-5-in. A.A. M.G.; 2 twin 21-in. torpedo tubes ; 1 catapult; 2 aircraft.
Correction to plan.—1 catapult fitted on M.I.

ITALY.

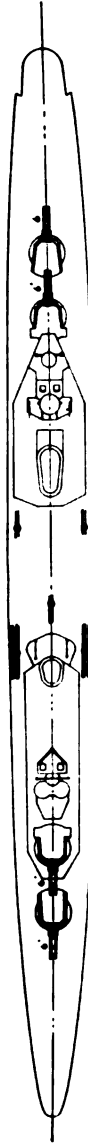
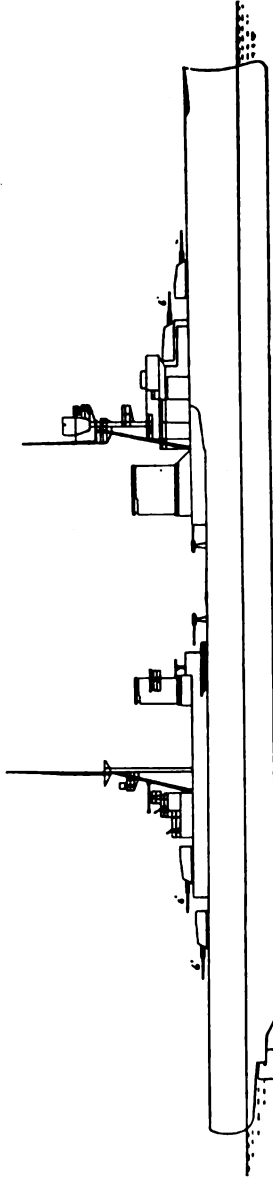
CRUISERS.

"Condottieri" Class.

Armando Diaz.*

Alberto di Giuliano,
Alberico di Barbiano.

Luigi Cadorna.*

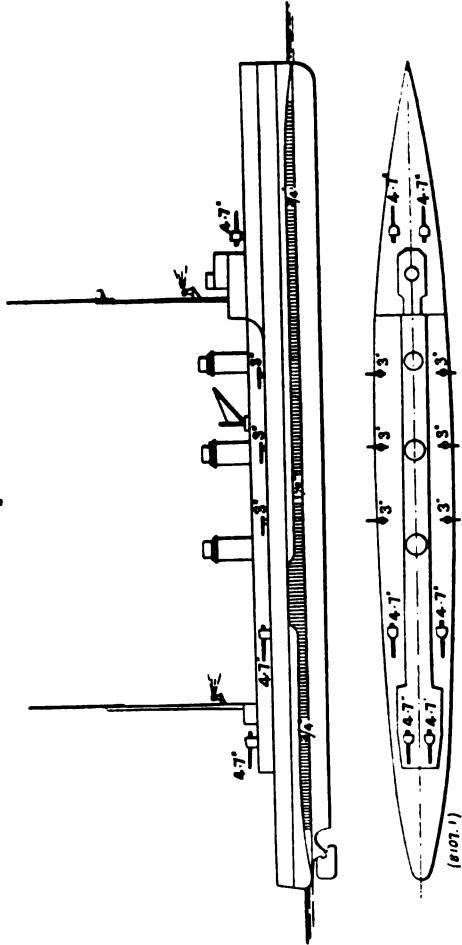


Length (extreme), 565 ft. 5 ins. ; 5,000 tons • (554 ft. 6 ins., 5,000 tons) ; Speed, 27 knots ; Completed, 1901-03.
 Armament, 8—6-in. ; 6—3-9-in. A.A. ; 8—1-5-in. A.A. ; 8—5 in. A.A. M.G. ; 4 torpedo tubes 21-in. ;
 1 catapult and 2 seaplanes.

Corrections to plan : The bridge and foremast have been modified. The after twin 8-9-in. A.A. gun is at the superstructure level on a raised platform. Fore topmast and stays to mainmast removed. Derrick fitted on foremast.

* In the Armando Diaz and Luigi Cadorna the mainmast is forward of the after funnel, the torpedo tubes are abreast the forward funnel, and the positions of the twin A.A. guns are reversed, the foremost gun being at forecastle deck level and the two after guns at upper deck level. The catapult is fitted between mainmast and X turret in Diaz and Cadorna ; on forecastle in other ships.

ITALY.
LIGHT CRUISER.*
Quarto.



Length (extreme), 431 ft. 9 ins. ; Speed, 28 knots ; 2,903 tons ; Completed, 1912.
Armament, 6—4.7-in. ; 4—3-in. ; 2—1.67-in. A.A. ; 5 M. ; 2 above-water 18-in. torpedo tubes ; 126 mines.
* Classified as Scout in Italian official list.

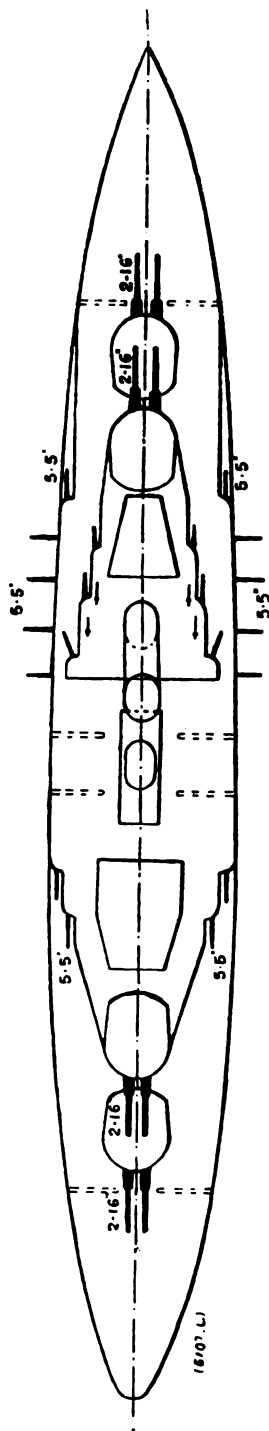
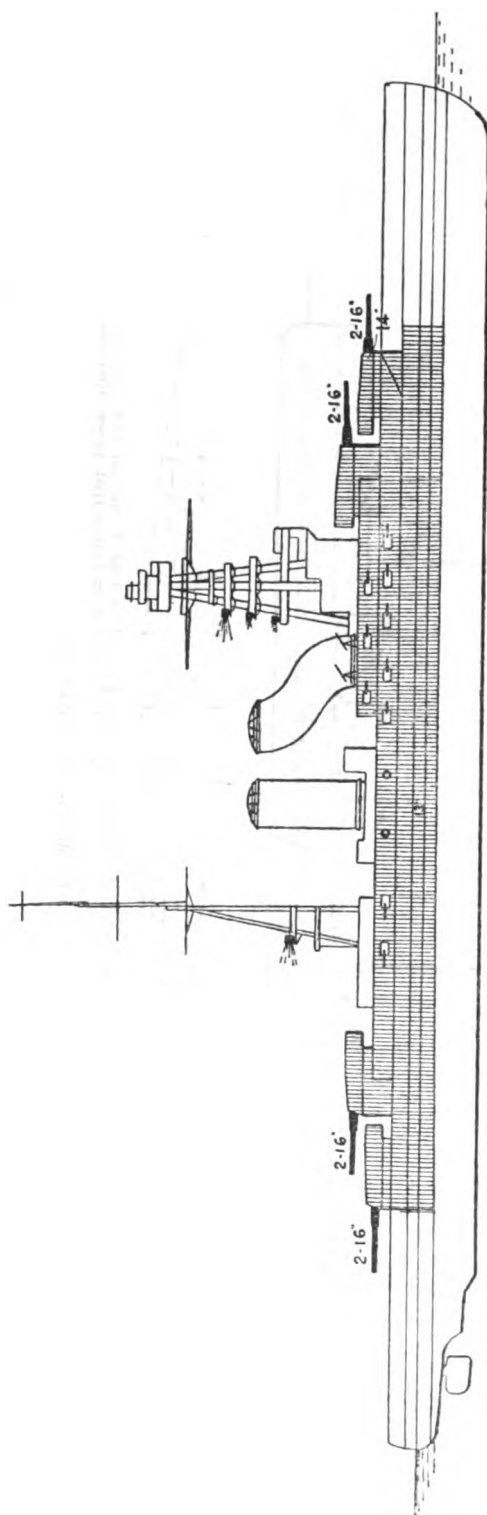
JAPAN.

BATTLESHIPS.

"Yagato" Class.

Nagato.

Mutsu.



Length (extreme), 700 ft. ; Speed, 26 knots ; 82,720 tons ; Completed, 1920-1921.

Armament, 8-16-in. ; 20-6-6-in. ; 8-6-in. A.A. ; 8 M.A.A. ; 1 catapult ; 3 aircraft.
These ships were reconstructed 1935-36, a single funnel being fitted and a catapult added between mainmast and "X" turret.
Bridgework extended. Superstructure built round mainmast. Main topgallant mast removed.

JAPAN.

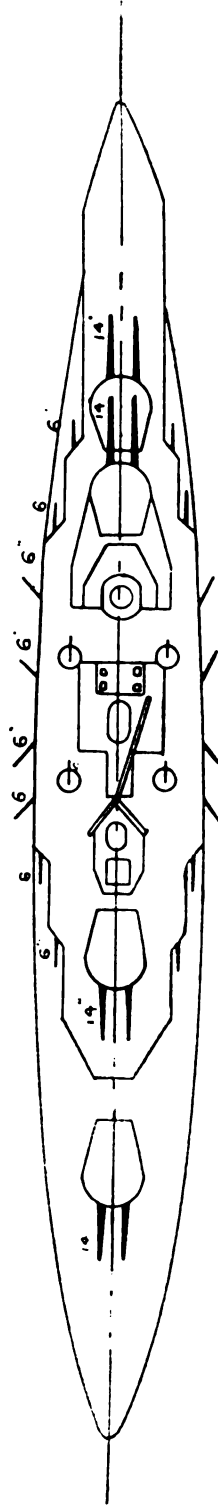
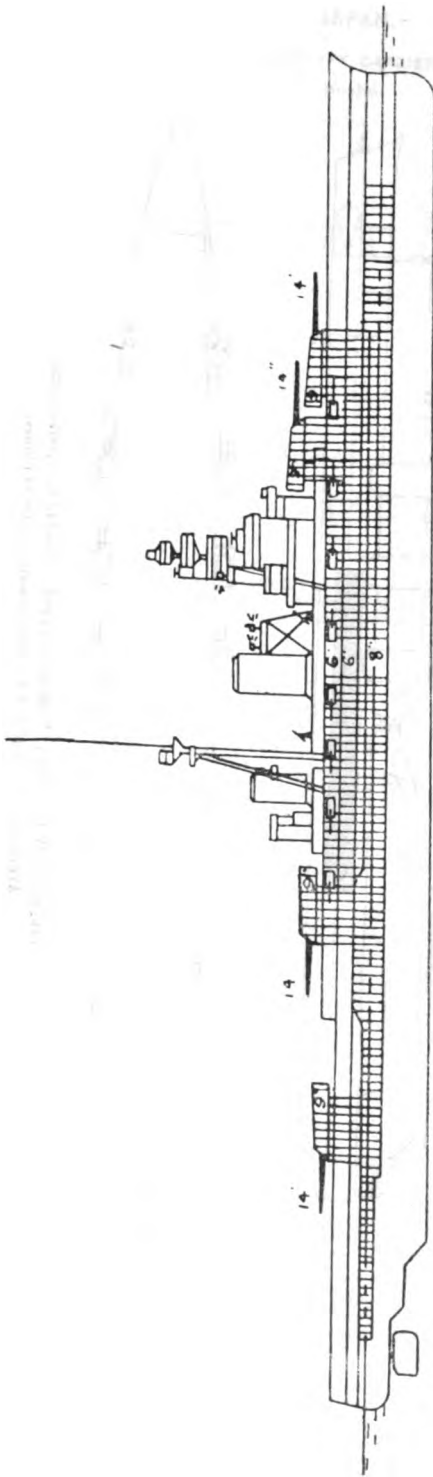
BATTLESHIPS.

"Kongo" Class.

Miyei.

Kirishima.

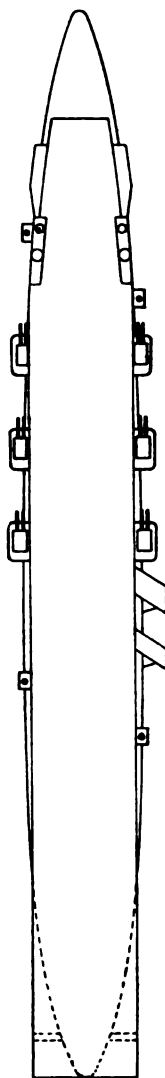
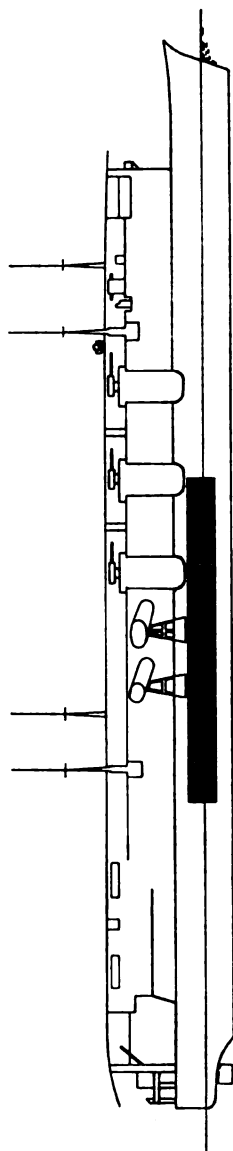
Kongo.



Length (extreme), 704 ft. ; Speed, 26 knots ; 29,330 tons ; Completed, 1914-15. Reconstructed, 1936-38.
 Armament, 8 16-in. ; 16-6-in. ; 8-6-in. A.A. ; 4 m. ; 4 submerged 21-in. torpedo tubes ; 3 aircraft ; 1 catapult.

Miyei (this class has been converted to a Training Ship in accordance with the London Naval Treaty.
 Corrections to plan.—The A.A. guns are in twin mountings. Derricks fitted between after funnels. Kongo has funnels of equal height.

JAPAN.
AIRCRAFT CARRIER.
Ryujo.

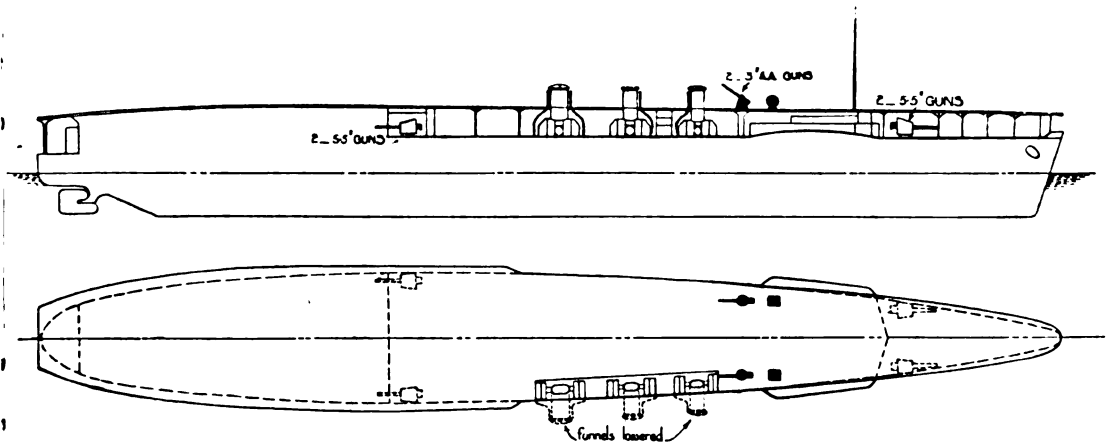


Length (on W.L.), 648 ft. ; 7,100 tons ; Speed, 26 knots ; Completed, 1933.
Armament, 12—6-1-in. A.A. Accommodation for 24 planes.

JAPAN.

AIRCRAFT CARRIER.

Hosho.

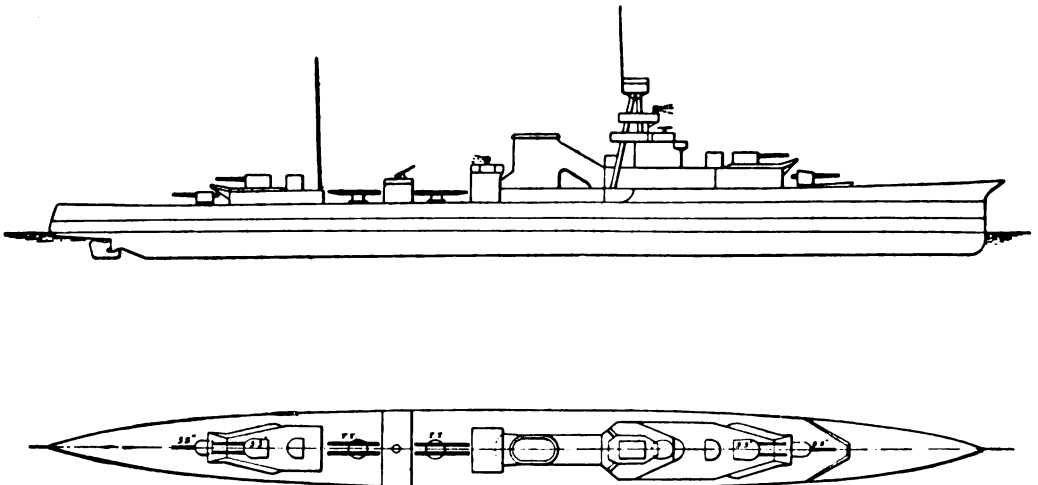


Displacement, 7,470 tons; Length B.P., 510 ft.; Speed, 25 knots; Completed, 1922.
Armament, 4—5.5-in.; 2—3-in. A.A.; Carries about 20 planes; Fitted with gyro-stabiliser.
Funnels hinge outboard.

JAPAN.

LIGHT CRUISER.

Yubari.

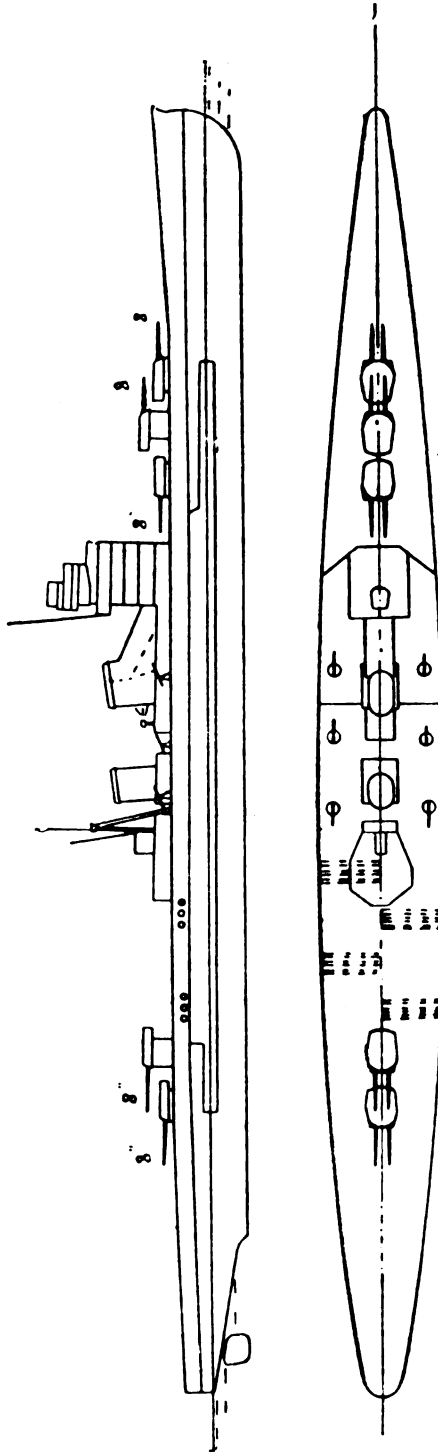


Length (extreme), 465 ft.; 2,890 tons; Speed, 33 knots. Completed, 1923.
Armament, 6—5.5-in.; 1—3-in. A.A.; 2 M.; 2 twin 21-in. torpedo tubes; 34 mines.
Correction to plan.—Masts and funnel raked aft.

JAPAN

CRUISERS

Nachi Myoko. Ashigara. Haguro. ("Nachi" Class.) Atago.* Takao.* Chokai.* Maya.* ("Takao" Class.)



Length (extreme), 860 ft. ("Takao" Class); 840 ft. ("Nachi" Class); "Nachi" Class, 10,000 tons; "Takao" Class, 9,850 tons; Speed, 33 knots. Armament, 10—8-in.; 8—4.7-in. A.A.; 2 M.; 12—21-in. torpedo tubes; 2 catapults; 4 aircraft.

* These have 4—4.7-in. A.A., and 8—21-in. torpedo tubes.

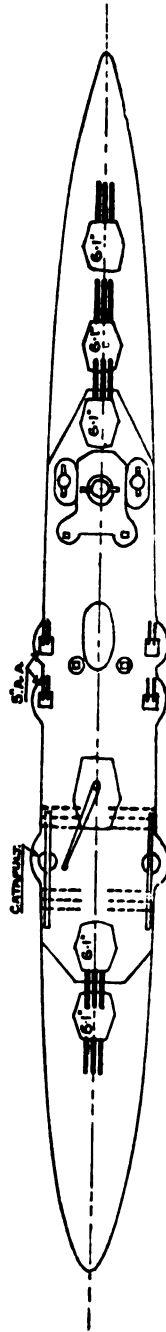
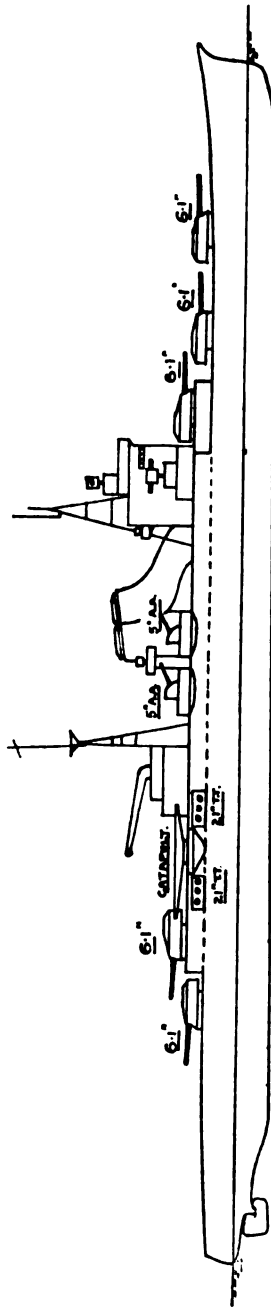
Corrections to plan.—In the "Takao" Class the after funnel is vertical, and the torpedo tubes are beneath the funnels on a deck higher. The four 4.7-in. A.A. guns are also a deck higher. Foremast has four braced legs. In the "Nachi" Class the foremost pair of 4.7-in. A.A. guns are a deck higher. Catapults fitted about mainmast.

JAPAN.

CRUISERS.

"Mogami" Class.

Buzuya.	Kumano.	Tone.	Tikuma
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Length (extreme), 640 ft. ; 8,500 tons ; Speed, 33 knots.

Armament, 15—6.1 in.; 8—5-in. A.A.; 12—21-in. torpedo tubes; 2 catapults, 4 aircraft.

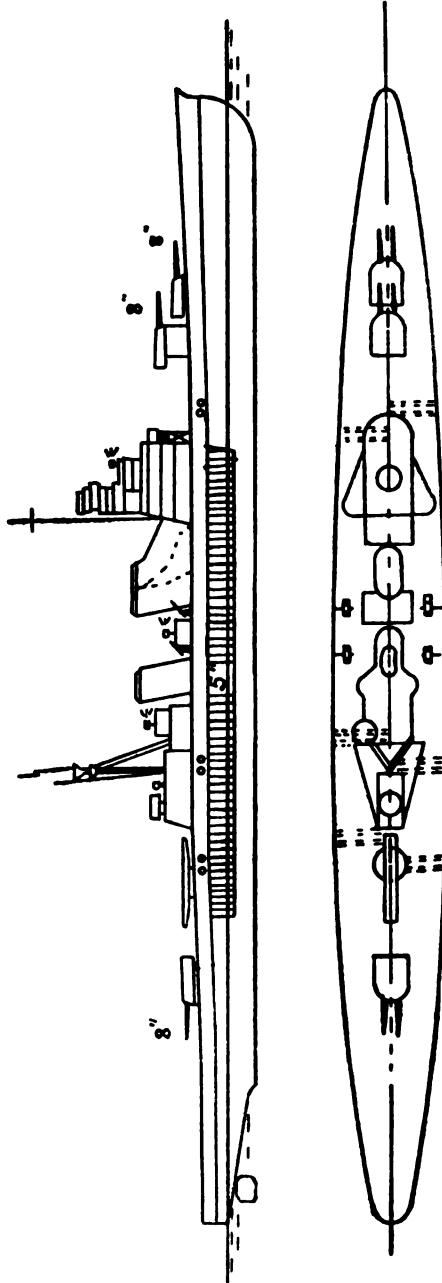
Mogami completed, 1935; Suzuya, 1936; Kumano, 1937; Tone, 1938; Takuma, 1939.

JAPAN.

CRUISERS

"Furutaka" Class,

Aoba. Kinugasa.



Length (extreme), 506 ft. ; 7,100 tons ; Speed, 33 knots ; Completed, 1927.

Armament, 6-8-in. ; 4-4-7-in. A.A. ; 10 m. ; 12-21-in. torpedo tubes ;

1 catapult ; 8 aircraft.

Correction to plan.—The tops of the funnels are square to the funnels.

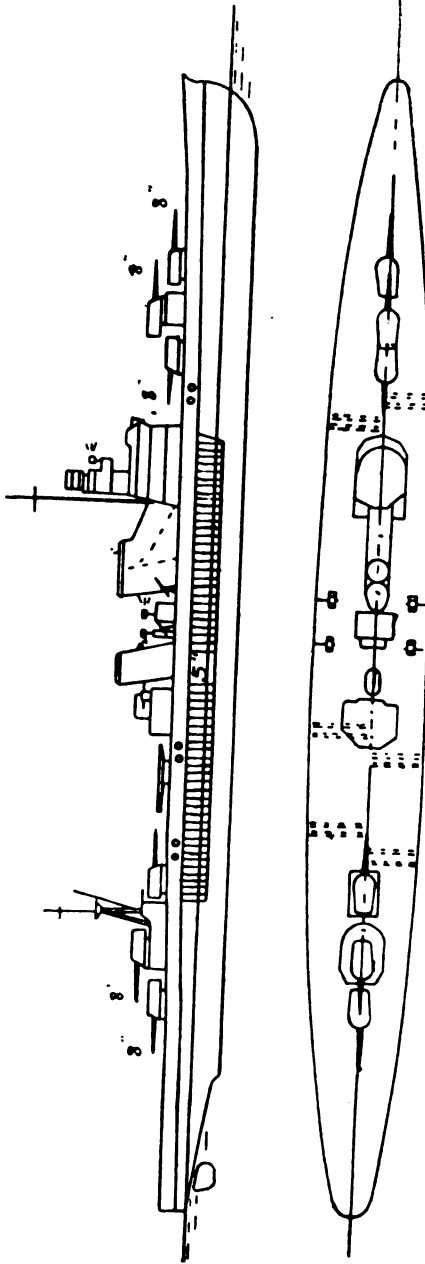
The pole mast is raked.

JAPAN.

CRUISERS,

"Furutaka" Class.

Furutaka. Kako.



Length (extreme), 595 ft.; 7,100 tons; Speed, 33 knots.
Armament, 6—8-in.; 4—4.7-in. A.A.; 10 M.; 12 above-water 21-in. torpedo tubes;
1 catapult; 2 aircraft.
Correction to plan.—The tops of the funnels are square to the funnels.
The masts are raked.

JAPAN.

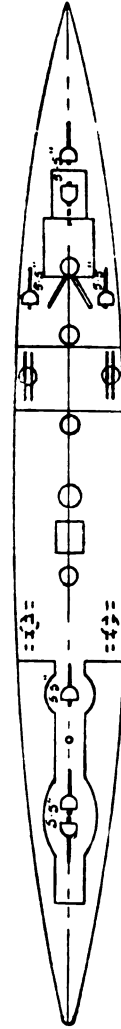
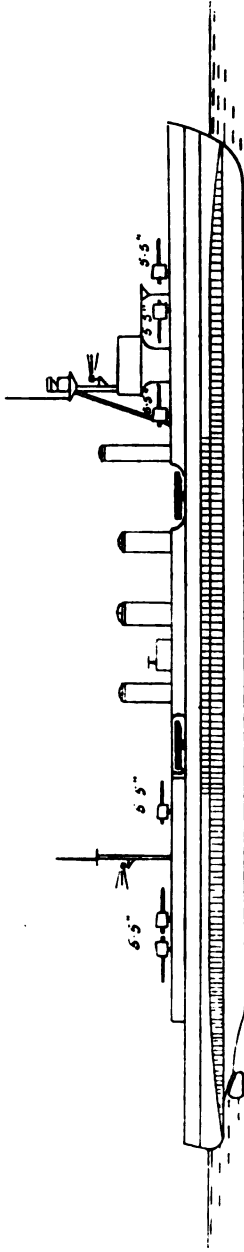
LIGHT CRUISERS.

"Sendai" Class.

Naka.

Sendai.

Jintan.



Length (extreme), 585 ft. ; Speed, 33 knots ; 5,195 tons ; Completed, 1924-25.

Armament, 7—6.5-in. ; 2—3-in. A.A. ; 6 M. ; 4 twin 21-in. torpedo tubes ; 80 mines ; 1 seaplane ; 1 catapult.

Correction to plan.—Bows of Jintan and Naka have been modified to give more flair.

Catapult fitted abaft mainmast which is of tripod construction and is fitted with a derrick. Aircraft platform removed from forecastle.

JAPAN.

LIGHT CRUISERS.

"Natori" Class.

{ Isuzu.
{ Nagara.{ Natori.
{ Yura.{ Kinu.
{ Abukuma.

"Kuma" Class.

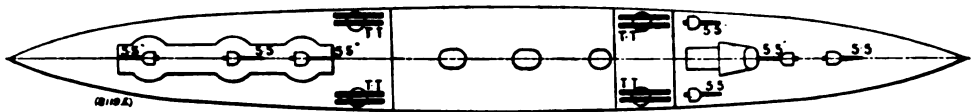
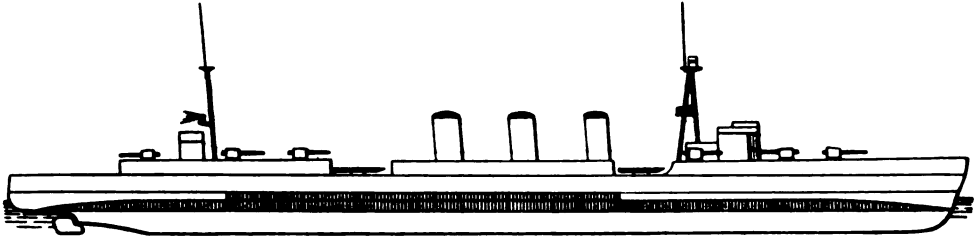
Ol.

Kiso.

Kitakami.

Tama.

Kuma.



Length (extreme), 535 ft. ; Speed, 33 knots ; "Kuma" Class, 5,100 tons ; "Natori" Class, 5,170 tons ;
Completed, 1920-23.

Armament, 7—5.5-in. ; 2—3-in. A.A. ; 2 M. ; 4 twin above-water 21-in. torpedo tubes ; 1 catapult ; 1 aircraft. 80 mines.

Corrections to plan.—Catapult fitted before mainmast, which is of tripod construction and is fitted with a derrick.

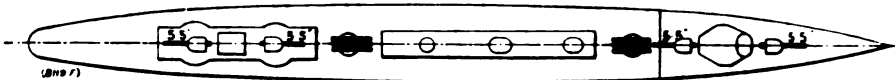
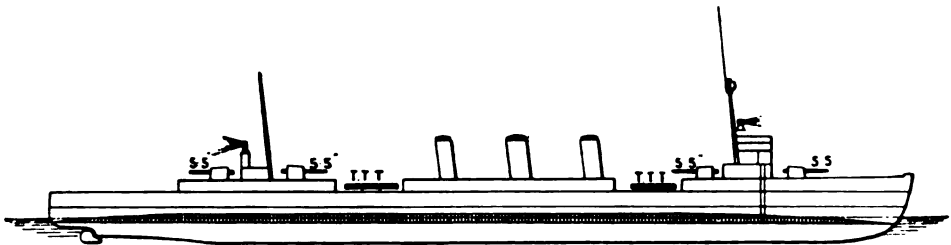
Bridgework modified and anti-flare tops fitted to funnels.

LIGHT CRUISERS.

"Tenryu" Class.

Tatsuta.

Tenryu.

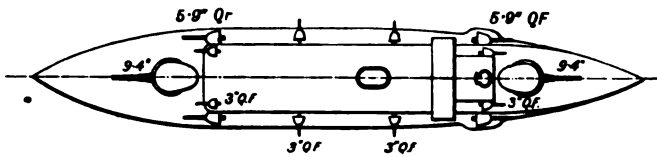
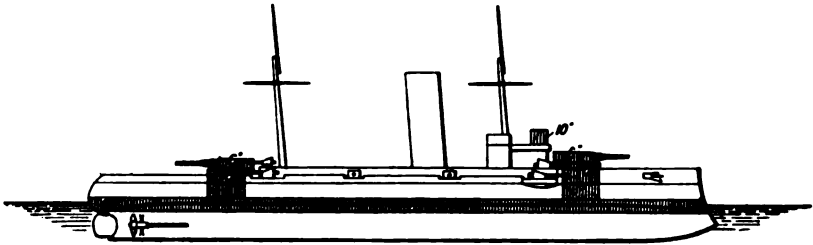


Length (extreme), 468 ft. ; Speed, 31 knots ; 3,230 tons ; Completed, 1919.
Armament, 4—5.5-in. ; 1—3-in. A.A. ; 2 M. ; 2 triple above-water torpedo tubes ; 1 seaplane.
Fitted for Minelaying.

NETHERLANDS.

COAST DEFENCE SHIP

Hertog Hendrik.

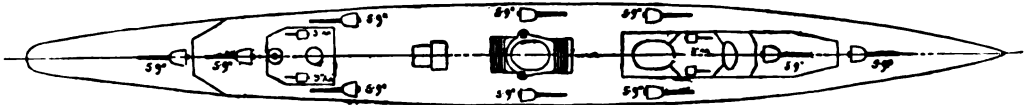
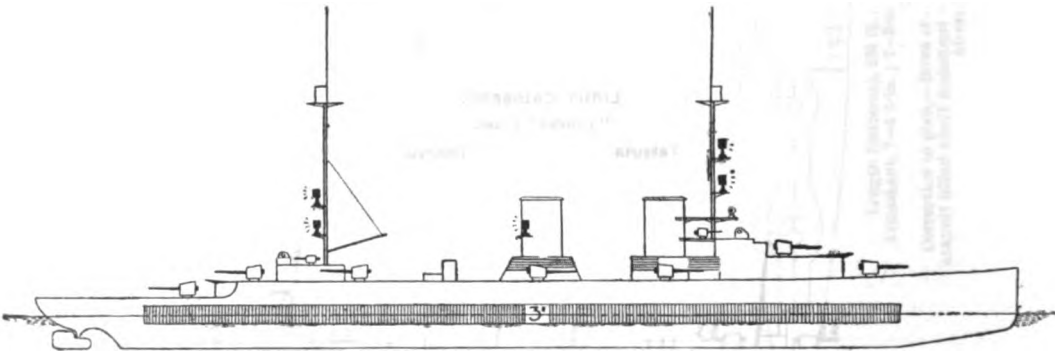


Length, 317 ft.; 4,371 tons; Speed, 16 knots; Completed, 1904.
 Armament, 1—9' 4-in.; 4—5' 9-in.; 2—3-in.; 6—1 pr.; 2 M.
 After gun removed.

NETHERLANDS.

CRUISER.

Sumatra.



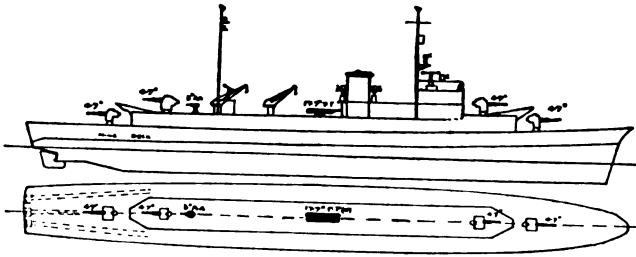
Length, 500½ ft.; 6,670 tons; Speed, 31 knots; Completed, 1925-26.
 Armament, 10—5' 9-in.; 6—1' 5-in.; 6—5-in. A.A.; 8 M.;
 40 mines; 2 seaplanes.

Corrections to plan.—The 4—3-in. A.A. have been removed. The mainmast has been shortened, moved forward, and fitted with derrick and searchlights. Main topmast removed. 3—4-cm. machine guns have been fitted each side of the after deck house. The forward 4-sided 5' 9-in. have been raised a deck to the signal deck, which has been extended aft for the purpose. Fore topmast shortened and foremast made larger. Cranes fitted abreast foremost funnel. Aircraft stowed between funnels.

NORWAY.

MINELAYER AND TRAINING SHIP.

Olav Trygvason.

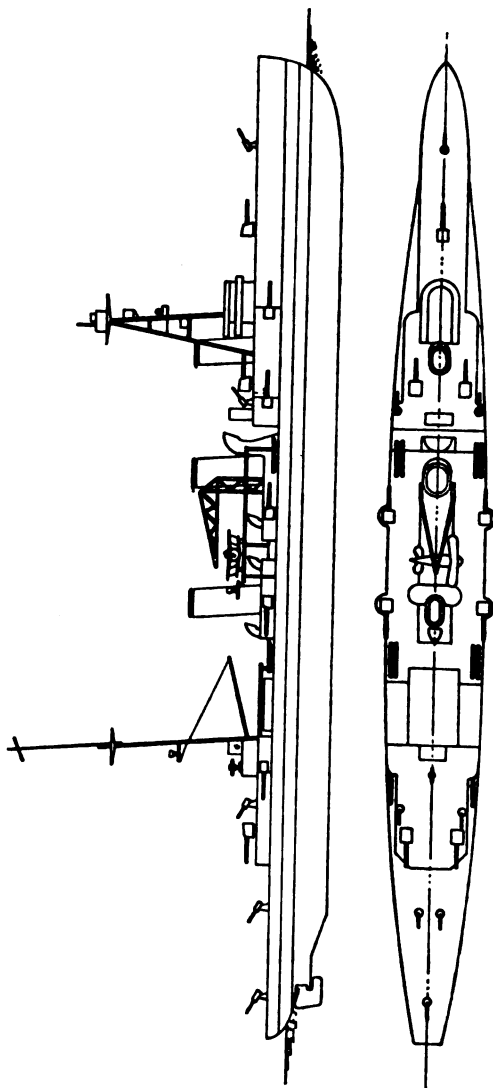


Length, 319½ ft.; 1,747 tons; speed, 21½ knots; Completed, 1934.

Armament, 4—4-7-in.; 1—3-in. A.A.; 2—17-7-in. torpedo tubes.
280 mines.

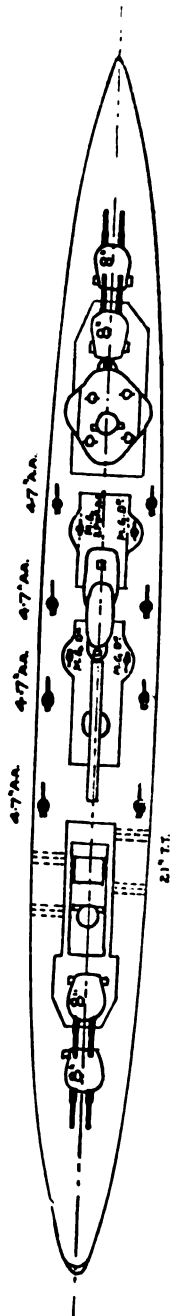
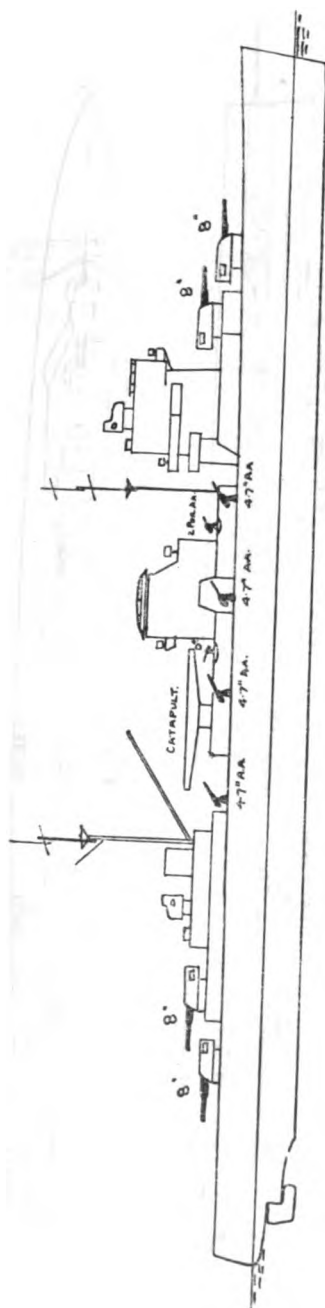
Correction to plan.—Both cranes are fitted abreast the mainmast.

SOVIET UNION.
CRUISER.
Profintern.



Length, 580 ft.; Displacement, 7,800 tons; Speed, 29½ knots; Completed, 1924-25.
Armament, 16-6" 1-in.; 4-4-in.; 4-3-in. A.A.; 4 M.; 12-21-in. torpedo tubes; 100 mines; 2 seaplanes.

**SPAIN.
CRUISER.
Canarias.**



Length (extreme), 686 ft. ; 10,000 tons ; 33 knots ; Completed, 1935.
Armament, 8-8-in. ; 8-4-7-in. A.A. ; 8-2-pr. A.A. ; 12-21-in. torpedo tubes ; 1 catapult ; 2 aircraft.
Masts removed.

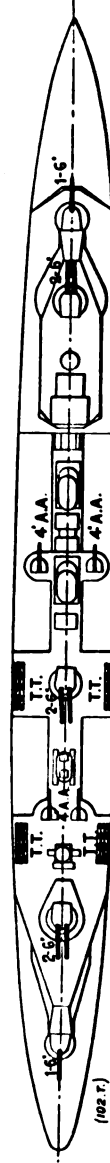
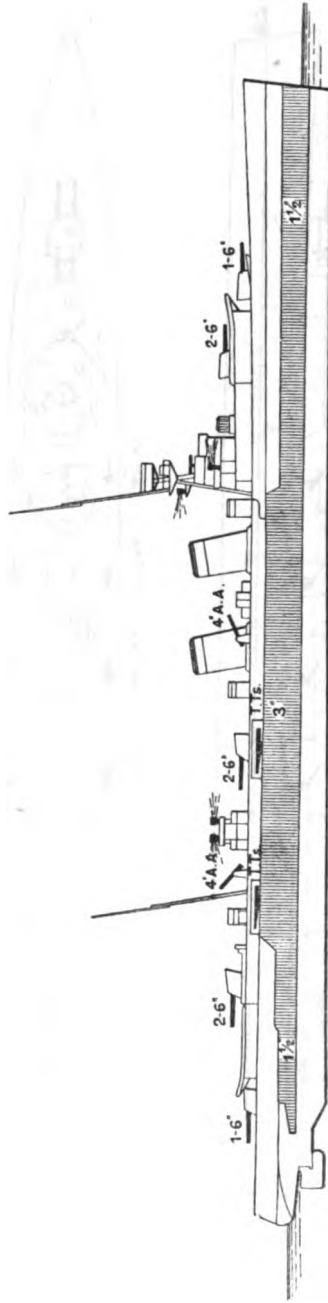
SPAIN.

CRUISERS.

Galicia (ex Libertad (ex-Principe Alfonso)).

Almirante Cervera.

Miguel de Cervantes.



Length (extreme), 579 ft. 6 ins. ; 7,475 tons ; Speed, 33 knots. Completed 1927-1930.

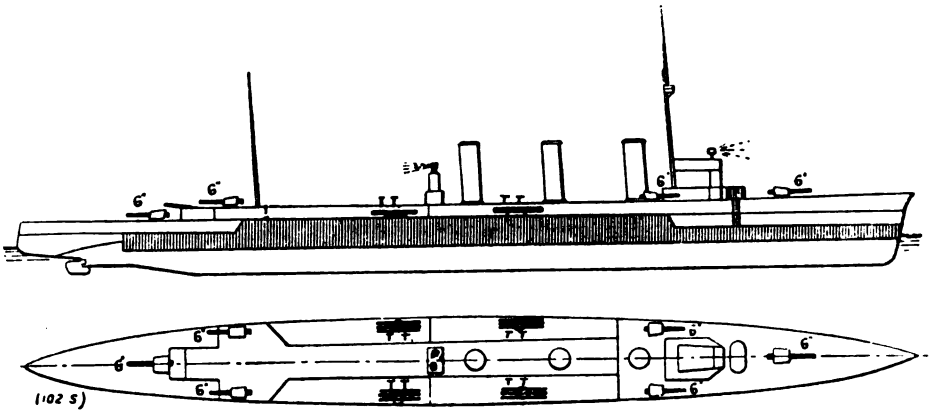
Armament, 8-6-in. ; 4-4-in. A.A. ; 2-3 pr. ; 1 M. ; 4 triple above-water torpedo tubes (21-in. torpedoes).

Corrections to plan. — The mainmast is tripod. Fore topmast and topgallant mast removed.

SPAIN.

LIGHT CRUISER.

Mendez Nuñez.



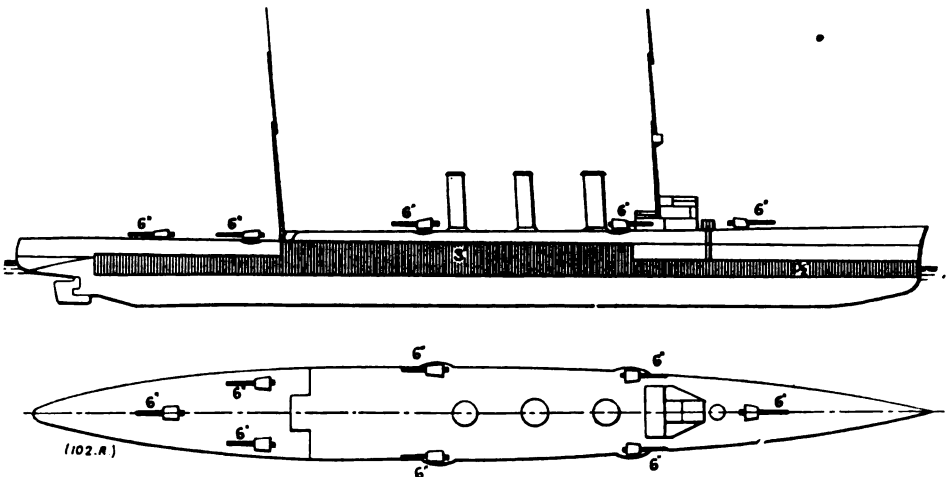
Length (extreme), 462 ft. ; 4,509 tons ; Speed, 29 knots. Completed, 1924.
 Armament, 6—6-in. ; 4—1·9-in. A.A. ; 4 M. ; 4 above-water triple torpedo tubes (21-in. torpedoes).

NOTE.—The armour belt is 3 ins. thick, tapering to 1½ ins. at the ends.

Corrections to plan.—The foremast is tripod. Fore topgallant mast is fitted.
 A.A. Armament is fitted between second funnel and mainmast. Searchlight platform added round after funnel.

LIGHT CRUISER.

Navarra (ex-Republica, ex-Reina Victoria Eugenia).



Length (extreme), 462 ft. ; 4,857 tons ; Speed, 25½ knots ; Completed, 1923.

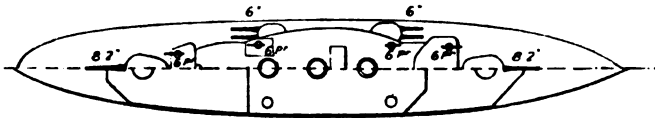
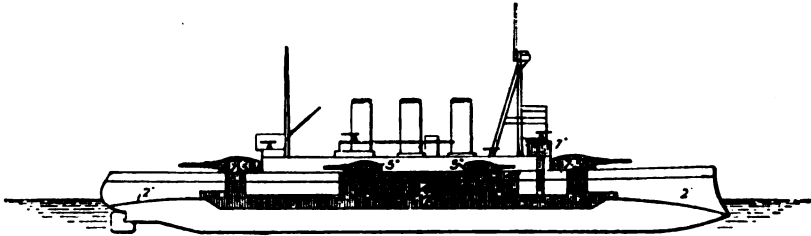
Armament, 6—6-in. ; 4—3·5-in. A.A. ; 4 M. ; 1 L. ; 4—21-in. torpedo tubes.

Correction to plan.—Foremost funnel and masts removed. Tower built in place of foremast and superstructure built in place of mainmast and fitted with pole masts. A.A. Armament fitted in way of funnels. Upper deck extends further aft.

SWEDEN.

BATTLESHIP.

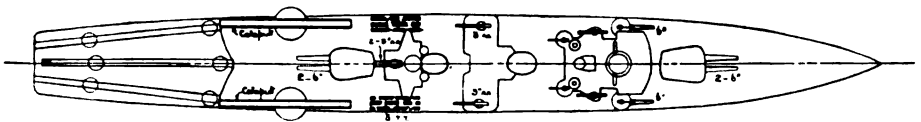
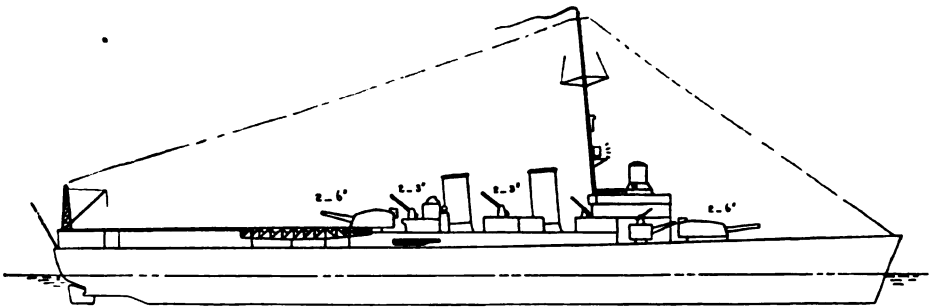
Oscar II.



Length, 313.6 ft. ; 4,250 tons ; Speed, 18 knots ; Completed, 1907.
Armament, 2—8.3-in. ; 8—5.9-in. ; 8—6-pr. ; 1—1-pr. ; 2 submerged 18-in. torpedo tubes.
Searchlights fitted on foremast and mainmast.

AIRCRAFT CRUISER.

Gotland.

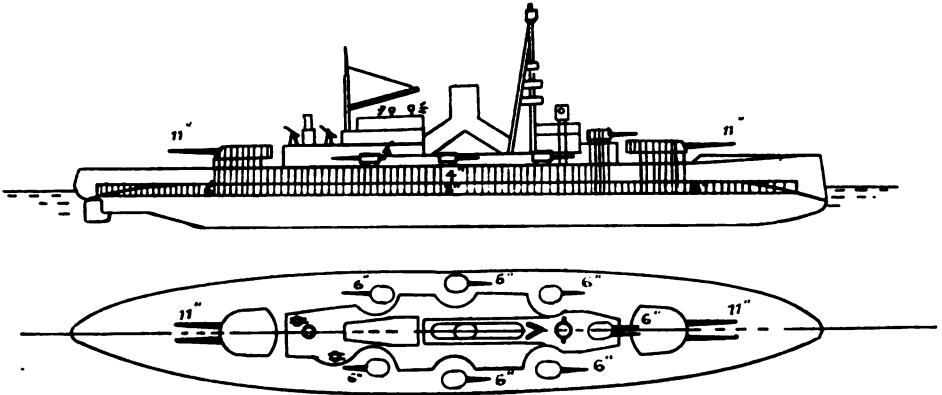


Length, 442 ft. ; 4,700 tons ; Speed, 27 knots ; Completed, 1934.
Armament, 6—6-in. ; 4—3-in. A.A. ; 4 M. ; 6—21-in. torpedo tubes ; 1 catapult ; 8 seaplanes ; 100 mines.
Correction to plan.—1 catapult is fitted on middle line.

SWEDEN.

COAST DEFENCE SHIPS.

Gustav V. Sverige.
(As reconstructed 1924-29.)



Length, 396·7 ft. ; Sverige, 6,899 tons ; Gustav V, 7,100 tons ; Speed, 23 knots ; Completed 1917-21.

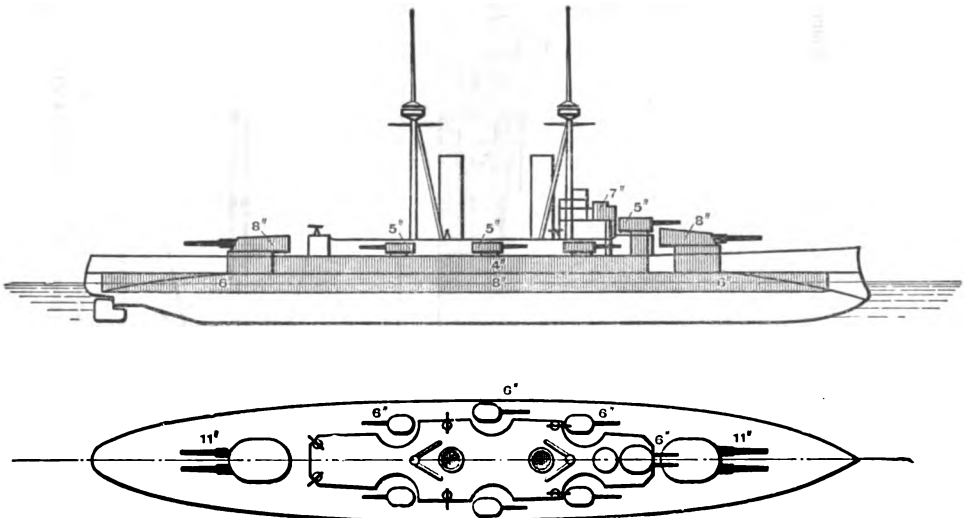
Armament, 4—11-in. ; 8—5·9-in. ; 4—3-in. ; 2—6-pr. ; 6 M.

Correction to plan.—Fore topmast added. Bridgework extended. Mainmast removed. In Sverige the mainmast is shortened ; two funnels are fitted, the after one being vertical and the forward one bent.

SWEDEN.

COAST DEFENCE SHIP.

' Drottning Victoria.



Length, 396·7 ft. ; 7,160 tons ; Speed, 23 knots ; Completed, 1921.

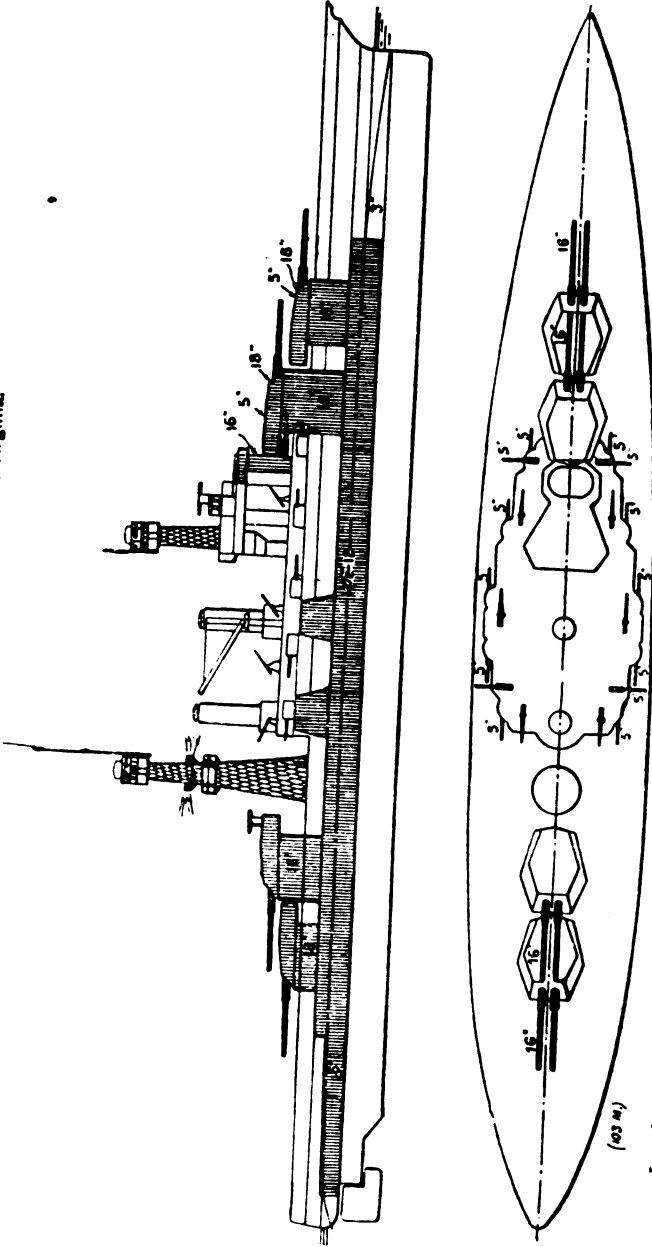
Armament, 4—11-in. ; 8—5·9-in. ; 4—3-in. ; 2—6-pr. ; 9 M.

Mainmast removed and bridgework modified. Searchlight platform and A.A. guns fitted abaft after funnel.

UNITED STATES.

BATTLESHIPS.

Colorado. Maryland. West Virginia.



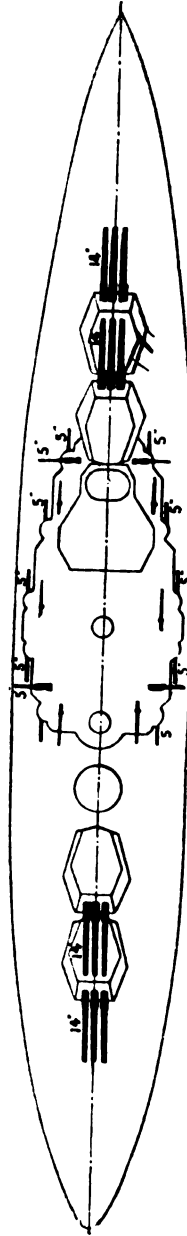
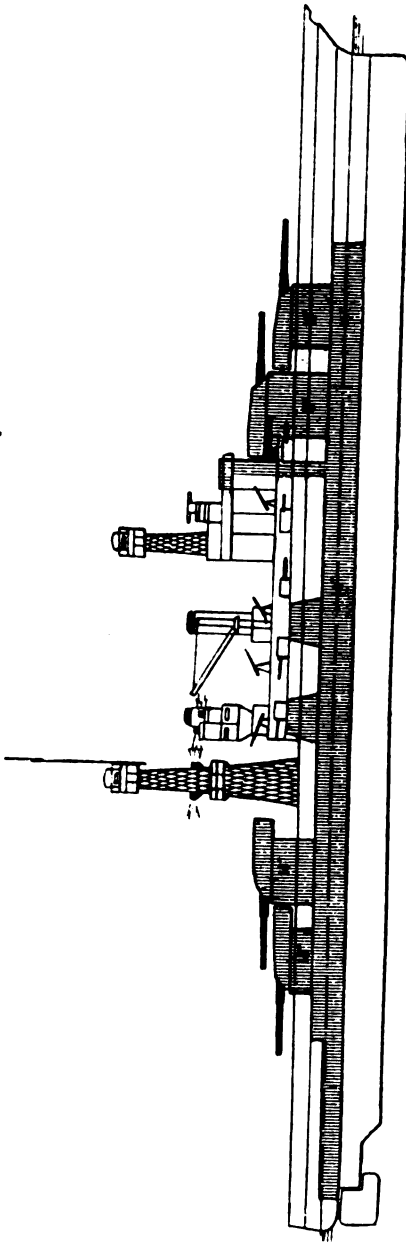
Length (extreme), 624 ft. ; Length W.L., 600 ft. ; Speed, 21 knots ; 31,500-32,500 tons ; Maryland, completed, 1921 ; Colorado and West Virginia, completed, 1922.
 Armament, 8-16-in. ; 12-5-in. ; 8-5-in. A.A. ; 2-6-pr. ; 2-1-pr. ; 8 M. ; 2 submerged 21-in. torpedo tubes ; 2 catapults ; 3 aircraft.
 Corrections to plan.—Catapults fitted on "X" turret and quarter deck. Crane fitted at stern. Main topgallant mast removed.
 Range finder fitted on B turret of Maryland.

UNITED STATES.

BATTLESHIP8.

California.

Tennessee.

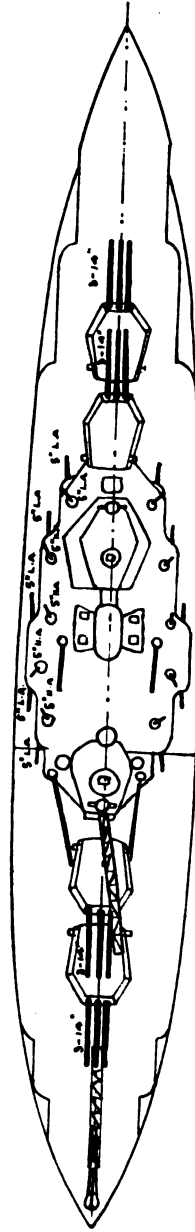
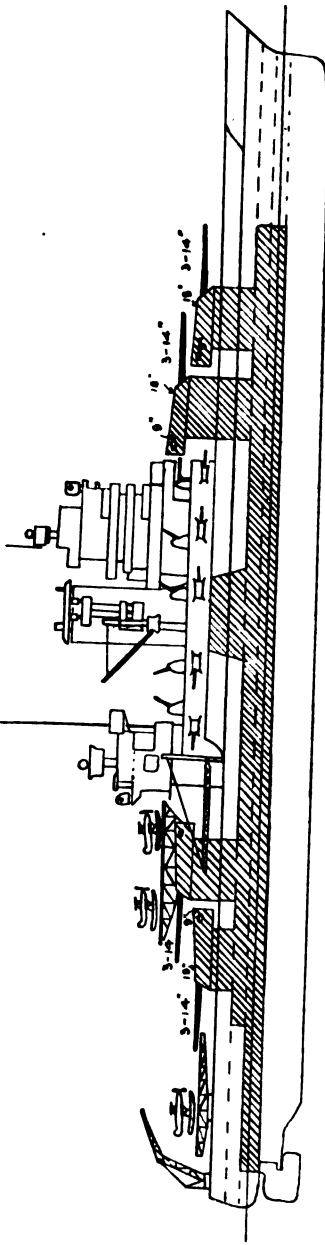


Length (extreme), 624 ft.; Length W. L., 600 ft.; Speed, 21 knots; 32,600-32,800 tons; Completed, 1920-21.
 Armament, 12-14-in.; 12-5-in. A.A.; 2-6-pr.; 2-1-pr.; 8-1-pr.; 2 submerged 21-in. torpedo tubes.
 2 catapults (one right aft on quarter deck and one "X" turret); 3 seaplanes.
 Main topmast shortened. Crane at stern.
 Topmast and yards fitted to foremast.

UNITED STATES.
BATTLESHIPS.
New Mexico.
(After modernisation 1934.)

Idaho

Mississippi.



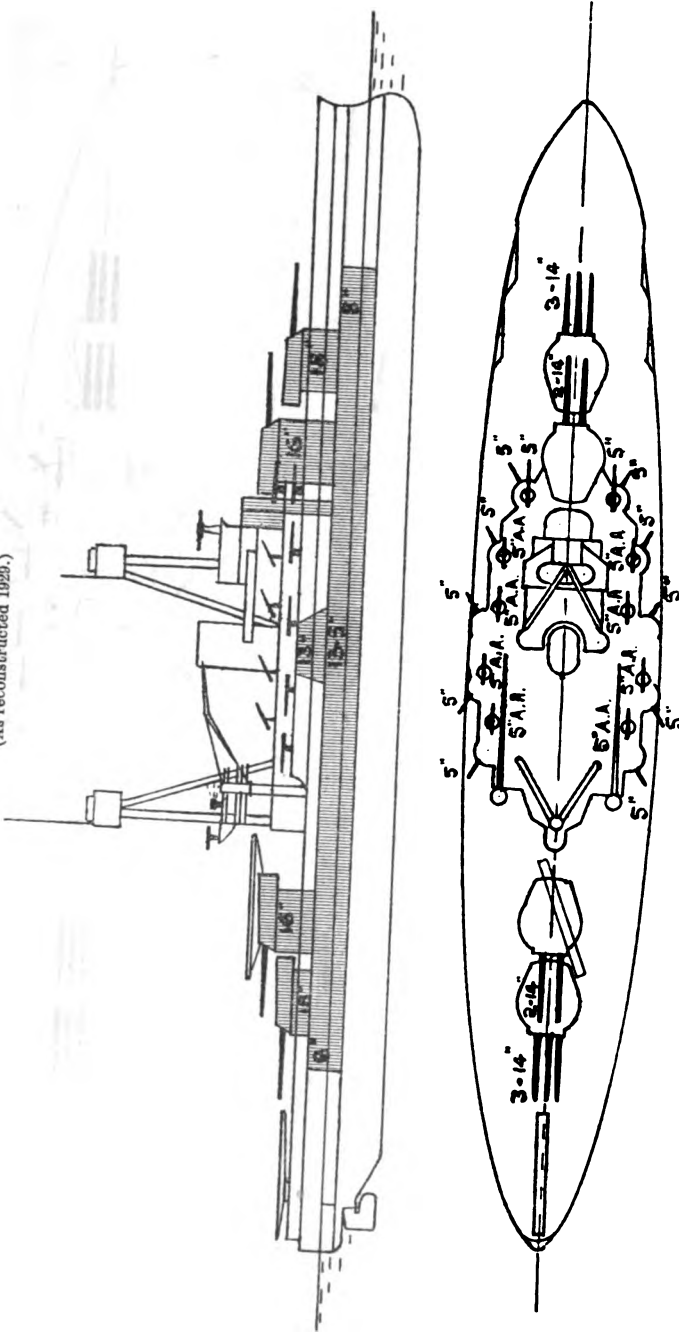
Length (extreme), 624 ft. ; Length, W.L., 600 ft. ; Speed, 22½ knots ; 33,000 tons ; Idaho and New Mexico, 33,400 tons ; Completed, 1917-19 ; Modernised, 1931-4. Armament, 12-14-in. ; 12-6-in. ; 8-6-in. A.A. ; 2-6-pr. (Idaho, 2-8-pr.) ; 2-1-pr. ; 8 M. ; 2 catapulta ; 3 seaplanes.

UNITED STATES

BATTLESHIPS.

Nevada. Oklahoma.

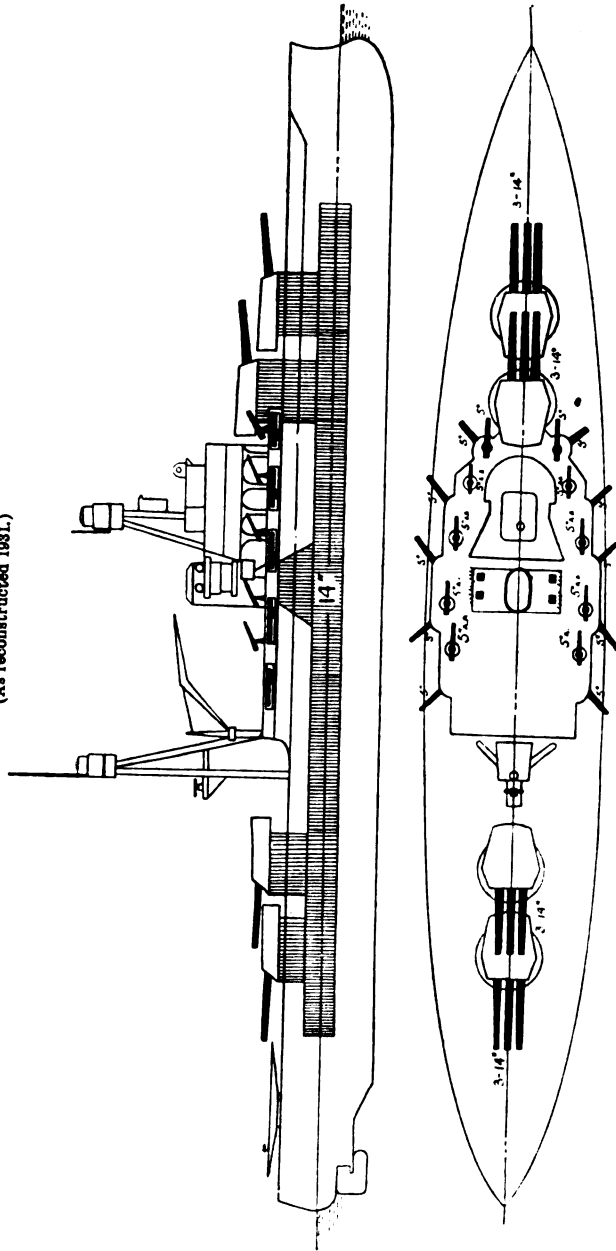
(As reconstructed 1920.)



Length (extreme), 583 ft. ; Length W. L., 576 ft. ; Speed, 20½ knots ; 28,000 tons.
 Armament, 10—14-in. ; 12—6-in. A. A. ; 2—6-in. A. A. ; 2—6-pr. (Oklahoma, 2—5-pr.) ; 2—1-pr. ; 2 M. ; 2 L. ; 2 catapults ; 8 aeroplanes.

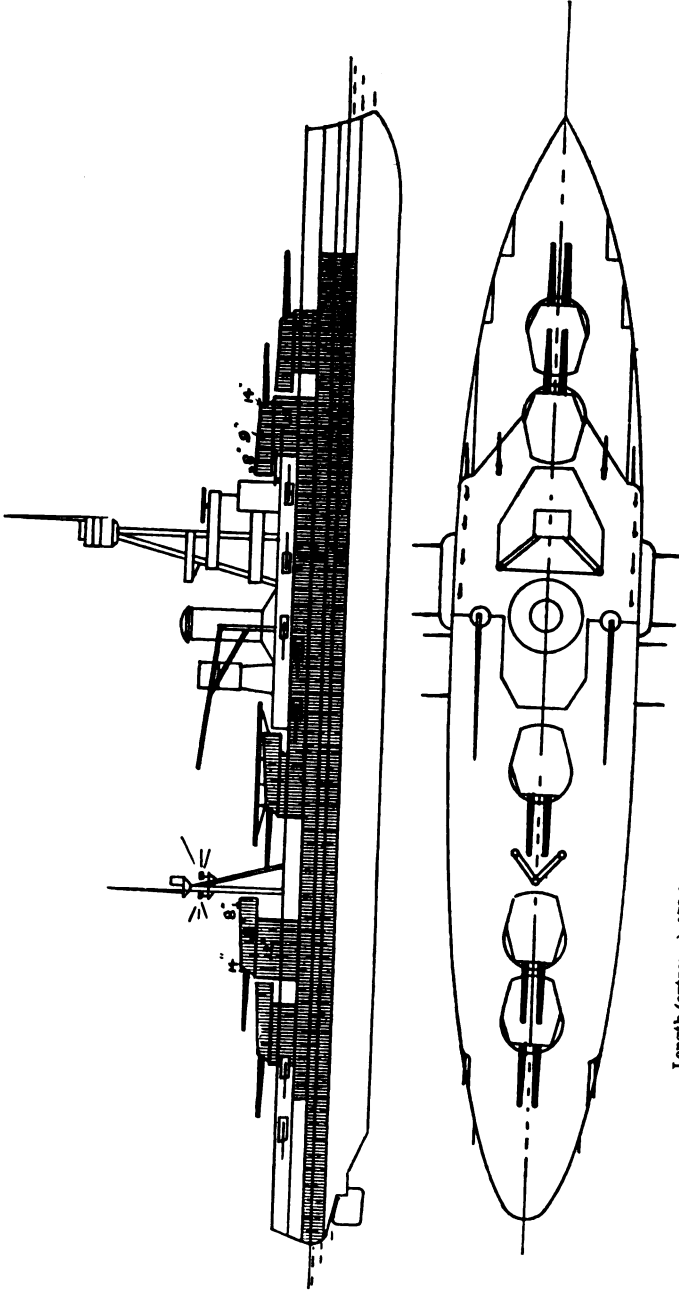
Correction to plan.—Bridgework extended and masts modified.

UNITED STATES.
BATTLESHIP.
Pennsylvania.
(As reconstructed 1931.)



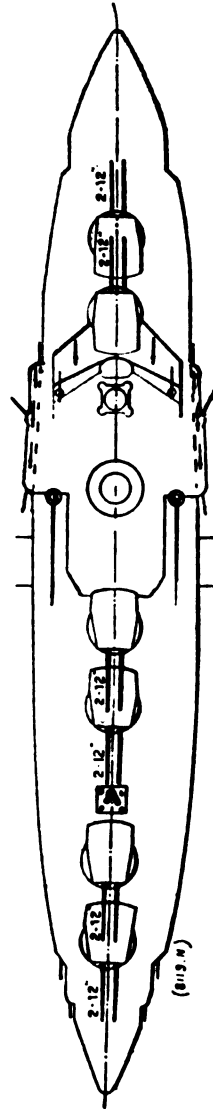
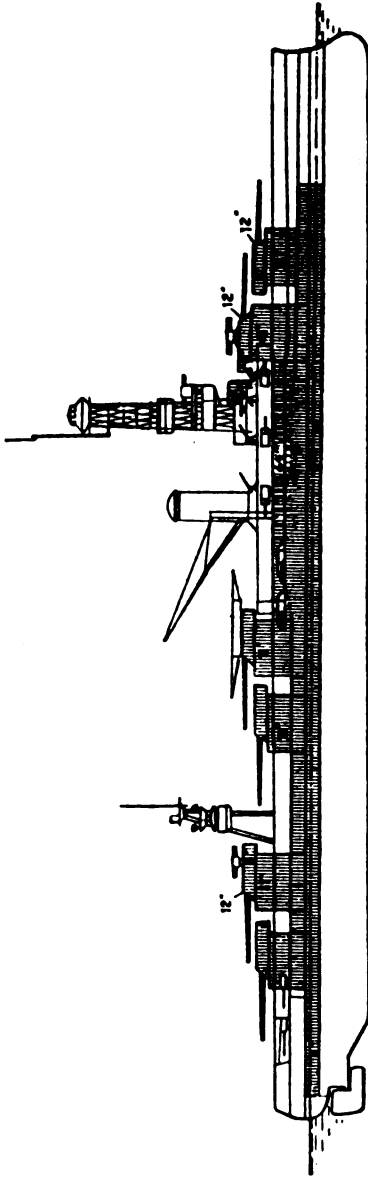
Length (extreme), 608 ft. ; Length B.P., 598 ft. ; Speed, 21 knots ; 33,100 tons ; Completed, 1916.
Armament, 12-14-in. ; 12-6-in. ; 8-6-in. A.A. ; 2-5-pr. ; 8 M. ; 2 L. ; 2 catapults ; 3 aircraft.
Corrections to plan.—Catapults fitted on "X" turret and quarter deck. Crane fitted at stern. Main topmast is on fore side of mast structure.

UNITED STATES.
BATTLESHIPS.
New York. Texas.
(As reconstructed 1927.)



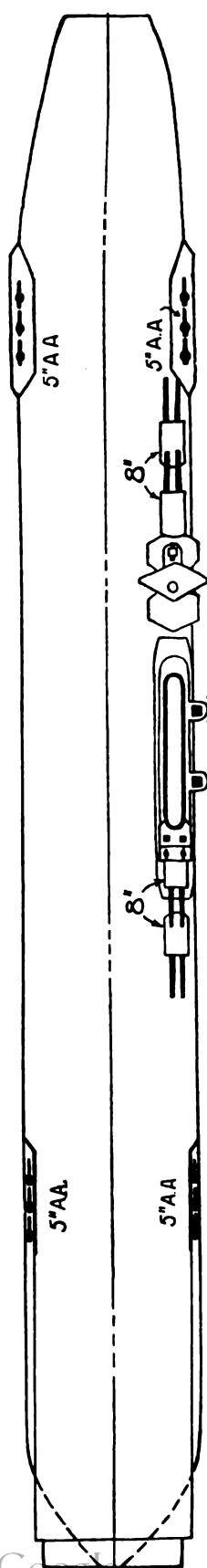
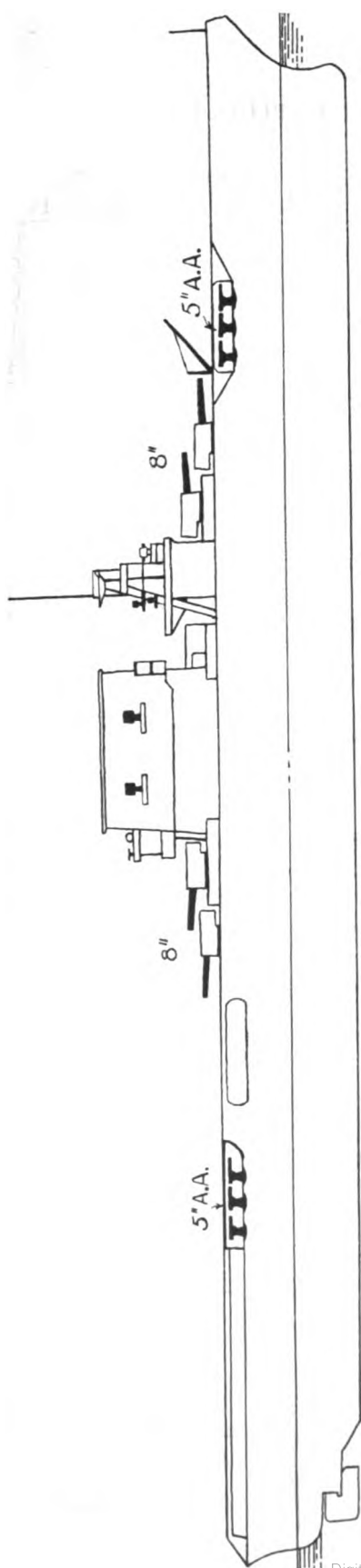
Length (extreme), 578 ft. ; Length W. L., 560 ft. ; Speed, 21 knots ; 27,000 tons ; Completed, 1914.
Armament, 10-14-in. ; 16-6-in. ; 8-3-in. A.A. ; 8-3-pt. ; 8 M. ; 1 catapult ; 8 aircraft.
Corrections to plan.—Fore topmast removed, mast heads modified. Main mast head fitted with machine guns.
Range finders fitted on "B" and "X" turrets.

UNITED STATES.
BATTLESHIP.
Arkansas.
(As reconstructed 1927.)



Length (extreme), 562 ft. ; Length, W.L., 555 ft. ; Speed, 20.5 knots ; 23,100 tons ; Completed, 1912.
Armament, 12—12-in. ; 16—6-in. ; 8—3-in. A.A. ; 2—3-pr. 8 M. ; 1 catapult ; 3 aircraft.
Wyoming, a sister ship, has been demilitarised and converted to a training ship.

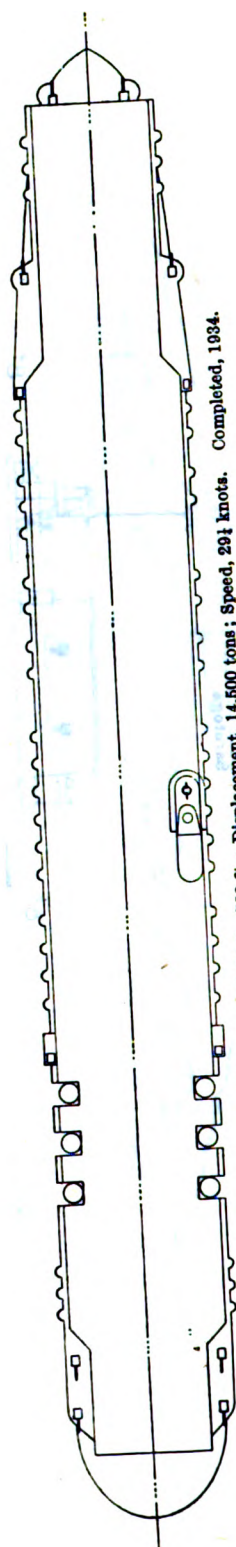
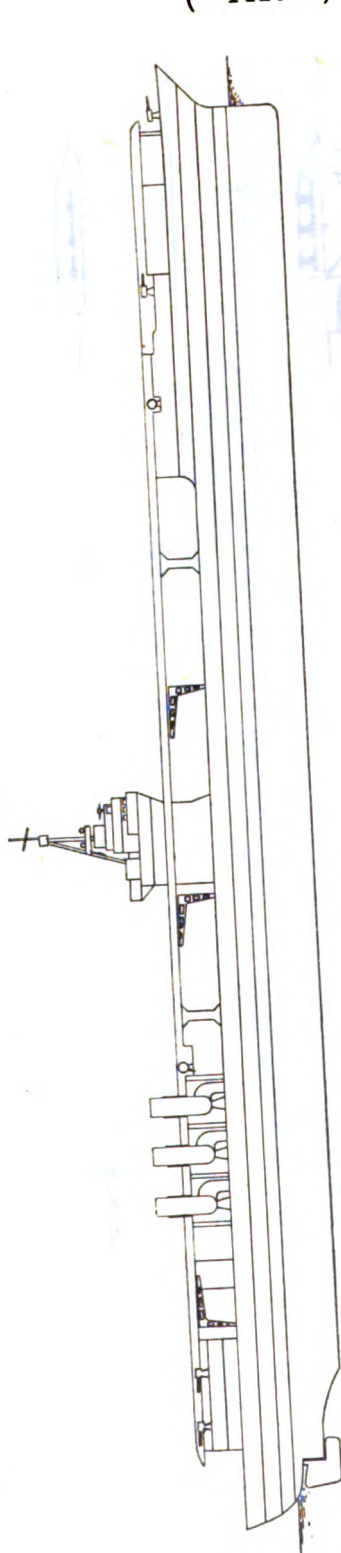
UNITED STATES.
AIRCRAFT CARRIER
Saratoga.



Length (extreme), 888 ft. ; 33,000 tons ; Speed, 33.9 knots ; Completed, 1927.
Armament, 8-8-in. ; 12-6-in. A.A. ; 2-6-pr. ; Operates about 80 aircraft ; 1 catapult.

UNITED STATES.
AIRCRAFT CARRIER.

Ranger.



Completed, 1934.

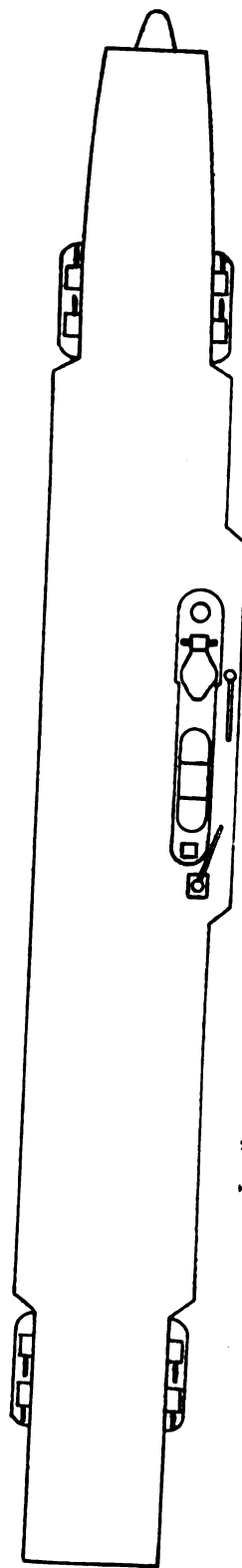
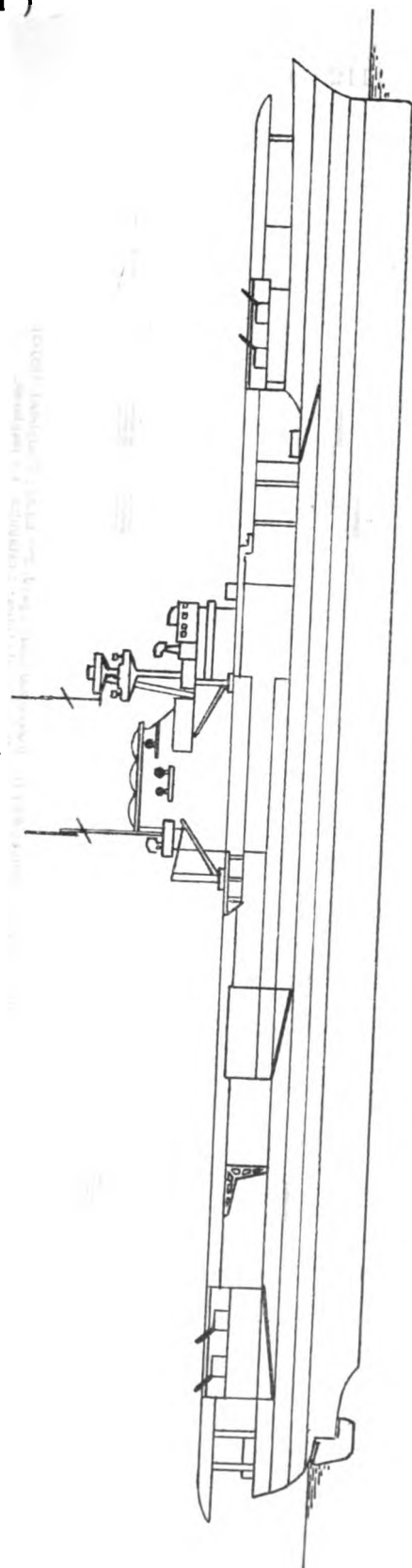
Displacement, 14,500 tons; Speed, 29½ knots.

Length W.L., 728 ft.; Length overall, 769 ft.;

Armament, 8—5-in. A.A.; 50 M.G.; 76 aircraft.

NOTE.—The funnels can be swung outboard. Signal masts fitted at ends of flight deck.

UNITED STATES.
AIRCRAFT CARRIER.
Enterprise.

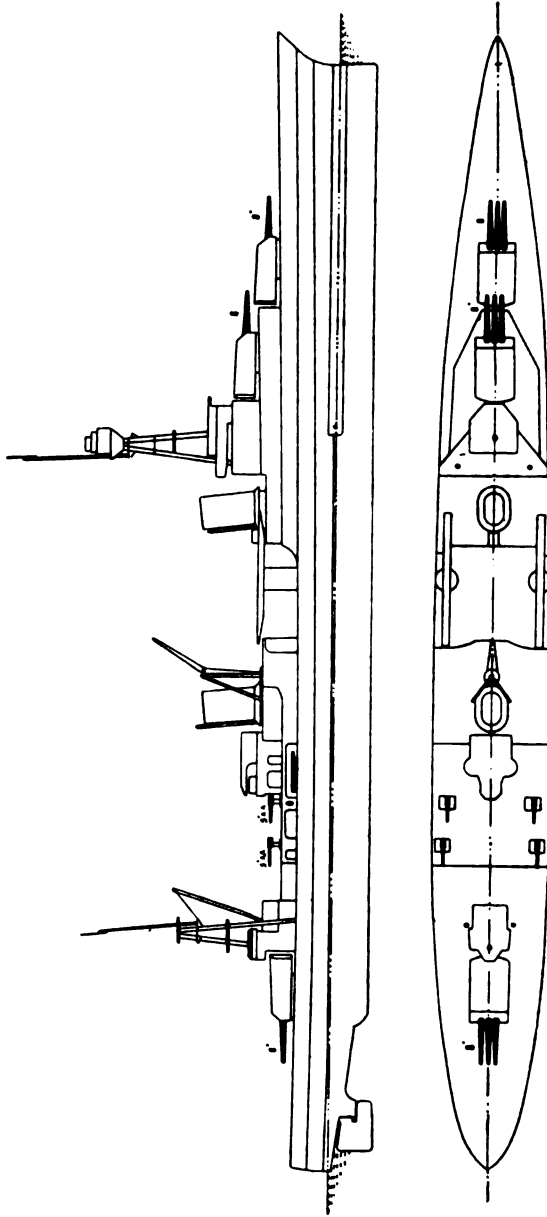


Length (on W.L.), 761 ft.; 19,000 tons; Speed, 24 knots; Enterprise and Yorktown completed 1938.
Armament, 8—5-in. A.A.; 16 1-1 in. M.A.A.; 76 aircraft; 1 catapult.

UNITED STATES:

CRUISERS.

Northampton.	Chester.	Louisville. ("Chester" Class.)	Augusta. ("Augusta" Class.)
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"Chester" and "Augusta" Classes: Length (extreme), 600½ ft.; 9,050-9,900 tons; Speed, 32-3 knots; Completed, 1930-31. Armament, 9-9-in.; 4-5-in. A.A.; 2-2-pr.; 8 M.; 2 triple 21-in. torpedo tubes; 2 catapults; 4-6 seaplanes. Correction to plan.—Fore topmast shortened.

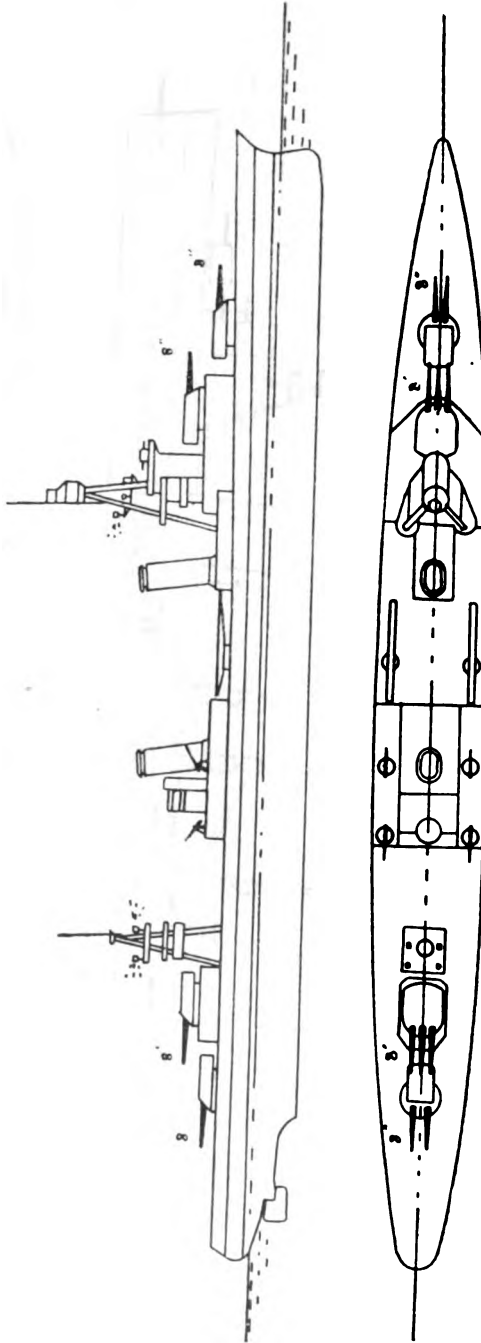
UNITED STATES.

CRUISERS,

"Pensacola" Class.

Salt Lake City.

Pensacola.



Length (extreme), 585½ ft. ; 9,100 tons ; Speed, 32.7 knots ; Completed, 1930.
 Armament, 10—8-in. ; 4—6-in. A.A. ; 2—8-pr. ; 8 M. ; 2 triple 21-in. torpedo tubes ;
 2 catapults ; 4 seaplanes.

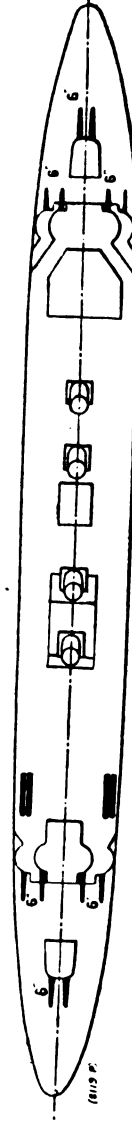
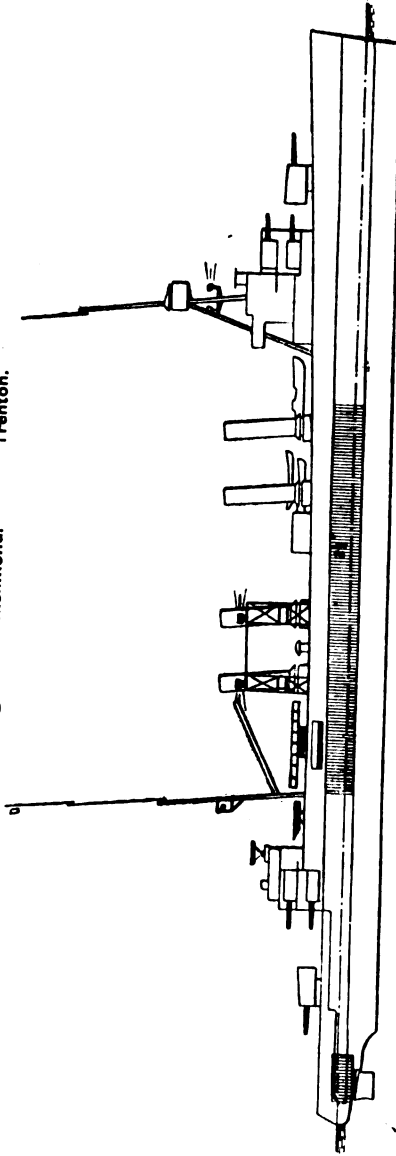
Corrections to plan.—Crane fitted on fore side of after funnel and derricks fitted on after side.

UNITED STATES.

SCOUT CRUISERS.

"Omaha" Class.

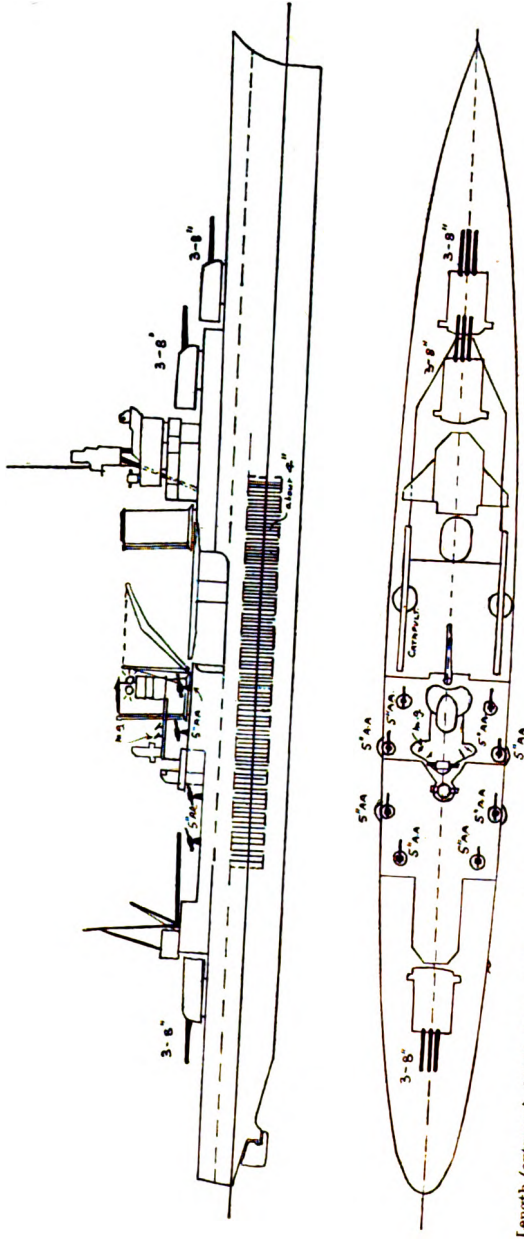
Cincinnati.	Concord.	Detroit. Raleigh.	Marblehead. Richmond.	Memphis. Trenton.	Milwaukee.	Omaha.
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Length (extreme), 565 ft. 6 ins.; Length W. L., 550 ft.; Speed, 32.7 knots; 7,050 tons; Completed in 1922-23. Armament, 12-6-in. (Marblehead, 11-6-in.; Cincinnati, Detroit, Raleigh and Richmond, 10-6-in.); 4-3-in. A.A.; 2-3-pr.; 2 triple above-water torpedoes; 21-in. torpedo tubes; 2 catapults; 2 catapaults; 2 aeroplanes; 80 mines. Corrections to plan.—The pair of single 6-in. guns at upper deck level aft are removed in Marblehead, Cincinnati, Detroit, Raleigh and Richmond. In Marblehead there is a single gun on top of the after battery. Topgallant masts removed and topmasts shortened. Foremast head in Marblehead fitted with machine guns.

UNITED STATES.
CRUISERS.

Indianapolis. Portland.

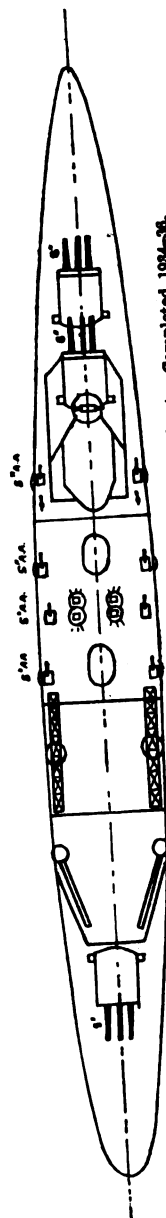
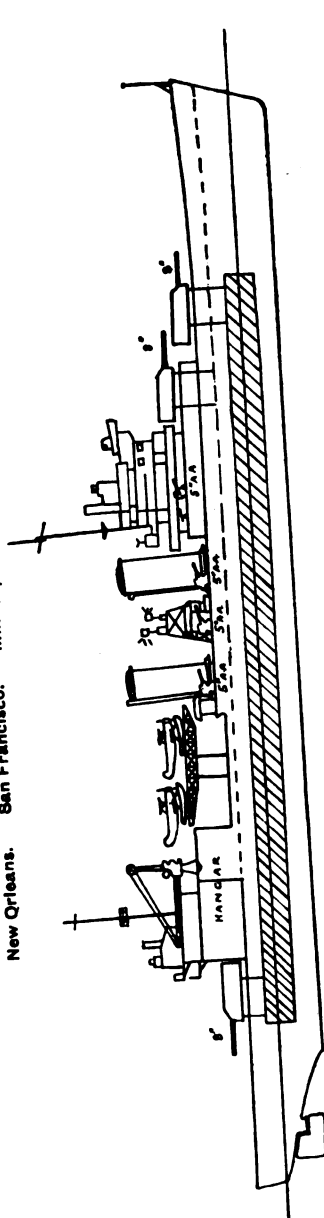


Length (extreme), 610 ft. 3 ins.; Indianapolis, 584 ft. on W.L.; Portland, 582 ft. on W.L.; Indianapolis, 9,950 tons; Portland, 9,800 tons; Speed, 32.7 knots. Completed, 1932-1933. Armament, 9-8-in., 8-5-in. A.A.; 10 machine guns; 2 catapults; 4-6 aircraft; 2-3-pdr.; 6-21 in. torpedo tubes. Corrections to plan.—Fore topmast is raked. Foremost funnel lengthened.

UNITED STATES.
CRUISERS.

"Astoria" Class.

New Orleans. San Francisco. Minneapolis. Tuscaloosa. Wichita.



Length (extreme), 568 ft.; on W. L., 574 ft.; 9,950 tons; Speed, 33.7 knots; Completed, 1934-36.
Armament, 9-8-in., 2-5-in., 2-3-pr., 10 smaller; 2 catapults; 4 aircraft.
Forward funnel fitted with clinker screen.

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accept civilian orders during
the war.

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a.a.cr. anti-aircraft cruiser ; *a.cr.* armoured cruiser ; *a.g.* armoured gunboat ; *air.c.* aircraft carrier ; *air.cr.* aircraft cruiser ; *air.t.* aircraft tender ; *a.s.* armoured ship ; *a.t.* aviation transport ; *b.* battleship ; *b.cr.* battle cruiser ; *c.d.* coast defence ship ; *cr.* cruiser ; *cr.m.l.* cruiser minelayer ; *d.* destroyer ; *f.c.d.* first-class destroyer ; *f.c.t.b.* first-class torpedo-boat ; *f.l.* flotilla leader ; *l.cr.* light cruiser ; *m.l. & t.s.* minelayer and training ship ; *s.c.d.* second-class destroyer ; *s.cr.* scout cruiser ; *sea-p.c.* seaplane carrier ; *tr.cr.* training cruiser.

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